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## and THE NATION'S HEALTH

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## Y

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tion of a major division of the health agency and who is largely responsible for the technical content of her program.

The report has been widely used by (1) colleges and universities training nutritionists and those arranging public health nutrition curricula; (2) administrators of civil service and merit systems; (3) employers selecting nutritionists, and (4) individuals preparing themselves for service in this field or arranging additional preparation for themselves or their staff.

Although the recommendations have proved helpful, their limitations have become increasingly evident. The subcommittee is agreed that the time has come to act on the implied promise in the footnote to the original report: "This report like all other statements of the Association on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought." The recommendations that follow cover the principal types of nutrition positions in the field of public health at the present time. It is impracticable to insist that all present incumbents comply with these requirements; they are recommended for application to candidates applying for appointment.

## II. STATEMENT OF FUNCTIONS

A. The nutritionist in a public health agency is a qualified professionally trained person who directs or carries on a program of activities dealing with the application of the scientific knowledge of nutrition to the promotion of positive health, the prevention of ill health, and the dietary control of disease. The nutrition program of a health agency is directed toward strengthening the service that the agency is rendering in determining the health status of the population served, in dealing with the causes of ill health, in caring for

the sick entrusted to its care, and in promoting well-being among groups and individuals through better food practices.

The function of a highly organized nutrition service of a large health agency will include most, if not all, of the following activities. In smaller health agencies the range of functions will be narrower.

### 1. Organizing and carrying out a program to:

a. Control dietary deficiency diseases through determining their prevalence and distribution and, if they are found to constitute a public health problem of some magnitude, by conducting or participating in clinics for their diagnosis and treatment.

b. Prevent dietary deficiencies and promote health through encouraging wise production or selection and proper processing, preparation, and use of the foods necessary for optimum nutrition. Such programs frequently call for coöperation between the health agency and agencies and organizations in the fields of agriculture, education, welfare, industry, medicine, nursing, and dentistry.

### 2. Studies and surveys:

a. On prevailing food practices of the population of a given area or of special groups, such as school, children, industrial workers.

b. On cost, availability, and use of foods needed to furnish an adequate dietary, these to be used as guides for setting up nutrition programs.

c. On the nutritional status with respect to certain factors of the population of a given area or special groups, such as residents of a home for the aged.

d. On the effect on nutritional status of modifications in the diet.

e. On the effectiveness of nutrition programs in improving food supplies and practices.

3. Preparation and assembling of materials for nutrition education and reviewing the nutrition content of all educational materials prepared or distributed by the agency.

4. Professional education. Participation in the field training of public

health students and in the orientation and in-service training of the staff of the health agency.

a. Imparting to public health workers and allied personnel a working knowledge of human food needs, nutritive values of foods, and methods of improving nutritional status in coöperation with whatever specialized personnel in nutrition may be available in the area served.

b. Participation in the pre-service and in-service training of nutritionists and of workers in related fields, such as educators, social workers, managers of food service in schools, child care centers, or institutions.

5. Consultation services for workers in health or allied agencies in regard to nutritional needs and dietary practices of individuals, families, institutional and industrial groups, or a cross-section of the population of a given area, with the object of planning ways of meeting these needs and improving practices within the resources—actual or potential—of the individuals or groups under consideration.

6. Individual and group instruction of adults and children on food, nutrition, and budgeting, in connection with health conferences or clinics or with the educational or service program of the health agency in schools or the agency's program of community education.

7. Compilation and, if necessary, preparation of nutritionally adequate food market orders, menu plans, and recipes, adjusted to various cost levels, to racial, religious, or regional food practices, and to individuals in unusual circumstances, such as night shift workers or persons living outside of family groups. Similar service for therapeutic and other special diets recommended by physicians.

8. Coöperation with welfare agencies in formulating budget standards for food to meet the nutritive needs of individuals, family groups, and institutions, and in calculating the cost of

standard food budgets at prevailing prices.

9. Inter-agency relationships. Bringing about closer relationships between the health agency and other agencies carrying on educational, service, or research programs in nutrition.

10. Coördination of nutrition programs. Participation in the organization and continuing activity of coördinating councils in the field of nutrition and health and in the organization of communities for unified effort toward the improvement of nutritional status and the maintenance of a satisfactory level of nutrition once attained.

#### *B. Classification of different grades*

The nutrition positions in health agencies may be grouped into 3 grades: (1) The director of a nutrition service in a health agency with responsibility for a staff of workers; (2) the nutritionist who acts primarily as a consultant and neither has responsibility for a staff of workers nor receives close technical supervision; and (3) the staff nutritionist working under close technical supervision from the director of a nutrition service. These grades are described in somewhat more detail in connection with the statements of education and experience under III and IV.

### III AND IV. BROAD EDUCATIONAL BACKGROUND (UNDERGRADUATE) AND GRADUATE EDUCATION

*A. For a director of a nutrition service in a health agency with responsibility for a staff of workers.* The essential qualifications for the incumbent of this position are broad grasp of the science of human nutrition, knowledge of public health administration, and administrative ability. The director cannot be expert in every aspect of public health nutrition but should be able to recruit and supervise a staff that together will possess competence in all the major

fields. Directors of nutrition services in health agencies may have acquired the necessary qualifications through any one of several backgrounds of education and experience but these backgrounds will have certain elements in common, as indicated in the following paragraphs:

1. Education. Human nutrition should be the subject of major interest. A director of nutrition service should have at least one year of full-time graduate academic credit in addition to the undergraduate academic training leading to a baccalaureate degree or its equivalent in pre-medical training. The combination should be so chosen as to qualify the student for participation as a nutritionist in the public health field.

Colleges and universities offer graduate training in public health nutrition in professional schools of public health or in postgraduate programs in nutrition based on undergraduate preparation in home economics. The content and extent of graduate study required to supply this training will vary according to the type of undergraduate preparation, the interval since such work was completed, the relevancy of any work experience, and the scope of the program directed.

a. The *undergraduate course of study* leading most immediately to preparation for public health nutrition is that qualifying the student for a baccalaureate degree with a major in foods and nutrition as offered in a course in home economics. Such a curriculum includes as a requirement basic courses in chemistry (including physiological or biochemistry), physiology, bacteriology, the social sciences (economics, sociology, and psychology), human nutrition, food study (selection, marketing, preparation), and educational methods. Electives often include introductory courses in statistics, child development, journalism, and public speaking.

b. Students whose undergraduate major has been in the biological sciences, social sciences, education, or pre-medical studies, will need to supplement such preparation with the required courses listed above.

c. The minimum of one year of *full-time graduate academic study* should feature advanced courses in human nutrition, and together with the undergraduate study should give a working knowledge of: methods and techniques of nutrition investigations and dietary studies, child hygiene and development, public health administration, health education, principles of supervision, community organization and resources, and social case work.

d. A course in hospital dietetics accredited by the American Dietetic Association is a desirable addition to other types of graduate preparation but is substitutable only in so far as it carries academic credit in courses essential for public health nutrition. Completion of the requirements for a degree as doctor of medicine or doctor of philosophy in biochemistry constitutes adequate educational preparation for the field of public health nutrition when the students have had full courses for academic credit in human nutrition and its applications in the field of public health.

e. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist should be provided preferably at the graduate level.

## 2. Experience \*

a. Minimum of 4 years of successful, paid experience as a nutritionist in a health agency or a welfare agency carrying on a nutrition and health program. At least one year must have involved responsibility as a supervisor of both professional and clerical staff or as a consultant, or

b. Two years in the above plus 4 years in any one of the following positions or any combination of them:

(1) Therapeutic or teaching hospital dietitian

(2) Physician engaged in clinical medicine, teaching of medical students, research, or public health

(3) Dietitian or nutritionist employed by a food clinic, child development center, school system, nutrition council or committee

(4) Research worker in human nutrition

(5) Teacher of foods and nutrition in a school, college, or university, or adult education program

\* Candidate should have had part of training and experience indicated within 4 years of the time of application.

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## Blood and Blood Derivatives— A New Public Health Field\*

CHARLES A. JANEWAY, M.D.

*Harvard Medical School and School of Public Health, and the  
Infants' and Children's Hospitals, Boston, Mass.*

UNTIL recent years, blood transfusion was not considered a matter of great concern to public health officials. A few private organizations strove to improve the technical aspects of transfusion, while others, in some cases allied with public health agencies, attempted to fill the needs of contagious disease hospitals and private physicians by collecting and distributing convalescent serum. Shortly before the war, a number of hospitals had established blood banks, and a few of them had even begun to distribute plasma and blood to neighboring institutions. Certain pharmaceutical laboratories likewise began the preparation and distribution of blood serum and plasma in liquid or dried form, thus providing these valuable therapeutic agents to physicians everywhere. The war has greatly accelerated the trend toward the widespread use of blood and blood derivatives—partly because a blood procurement, processing, and distribution program, in which the American Red Cross, the pharmaceutical laboratories,

and the armed forces have coöperated, has made blood, freely donated by the American people, available in great quantities to physicians treating our wounded in every corner of the globe; partly because the OCD has stimulated the development of blood and plasma banks in many of the hospitals of the country; and partly because research in this field has expanded the possible clinical uses of blood and its derivatives. The American public has been educated to blood donation, and the public has become conscious of the fact that anybody who needs blood or its derivatives should not be deprived of something which the armed forces have demonstrated can be made universally available.

The sheer number of transfusions given annually is enough to command attention from public health authorities, but there are more compelling reasons: (1) protection of the public from disease transmitted by blood and its derivatives; (2) provision to the public of blood products for the prevention of communicable disease; (3) distribution of blood and blood products

\* Special Review Article prepared at the request of the Editorial Board.



for use in the treatment of disease. These reasons in order indicate an expanding conception of the functions of a health department. The first acknowledges its customary responsibility for the protection of the public from transmissible disease whenever there are accepted methods of control. The second, the provision of agents for the control of transmissible disease, is a logical extension of the first. The third, however, represents an excursion of public health agencies into the practice of medicine and therefore demands justification.

1. *The transmission of disease by blood and its derivatives*—The fact that certain diseases can be transmitted by the transfusion of blood has been recognized for a good many years. Its importance lies in the fact that these diseases are frequently serious, are often unrecognizable in the donor, and have become more widespread in our population as a result of the war.

a. *Syphilis*—The application of sensitive "exclusion" tests for syphilis to the serum of prospective donors has reduced the incidence of transfusion syphilis. However, it is possible to transmit syphilis by transfusion from a donor in the primary stage of the disease when the serologic test may still be negative.<sup>1</sup> Hence the introduction of laws requiring the physician to certify that a donor is free of transmissible disease, presumably as the result of a careful physical examination. Such laws, although worthy in purpose, are rather unworkable, and reliance should be placed on the use of bank blood, since blood held in the refrigerator for at least three days is unlikely to transmit the disease.<sup>2</sup> While other spirochetal diseases and certain bacterial infections may also be transmitted by blood, these should be ruled out by such simple procedures as temperature taking and brief questioning of the donor.

b. *Malaria*—The transmission of ma-

laria by transfusion is well authenticated. In Massachusetts, Rubinstein has shown that transfusion malaria has been more common than the mosquito-born disease in recent years.<sup>3</sup> Although the tertian and aestivo-autumnal forms may be transmitted by the blood of recently recovered patients, quartan malaria is the usual type, since the parasites may persist for thirty years or more and the donor may not be aware of ever having had malaria. It seems likely that donors from the veterans' groups who have been in the endemic malarious zones, particularly the Mediterranean area, will have to be excluded as donors for whole blood and their blood converted to dried plasma or plasma fractions in order to obviate this risk in the post-war period.

c. *Homologous serum jaundice*—A vexing problem has been created by the realization that blood or plasma from an apparently healthy person may produce severe hepatitis with jaundice in the recipient several months later. The causative agent is probably a virus, which may circulate in the donor's blood for considerable periods without recognizable symptoms, and which is able to survive long periods of storage and to pass ordinary bacteriological filters. The importance of this disease which had been recognized for some time by British workers<sup>4</sup> was brought home with full force when epidemics of jaundice broke out in troops of the United States<sup>5</sup> and British armies<sup>6</sup> as well as in the civil population of Brazil<sup>7</sup> who had received yellow fever vaccine stabilized with a small amount of human serum.

Although the agent of hepatitis may be transmitted in whole blood, the statistical chances of its transmission are greatly increased by the pooling procedures used in making plasma. The disease has a long incubation period, varying from 60 to 180 days, its pathology appears to be much the same

as that of epidemic hepatitis (catarrhal jaundice) with acute yellow atrophy in fatal cases<sup>8</sup> and evidence that in non-fatal cases the process ultimately results in complete restitution of normal liver architecture,<sup>9</sup> while its prognosis is perhaps somewhat more serious. Whether or not it is the same disease modified by a different portal of entry or a different disease cannot yet be stated categorically. Methods for destroying the agent in whole blood and plasma which are applicable on a large scale have not been found. At the start of the plasma fractionation program to be discussed later, it was feared that the incidence of serum jaundice might be extremely high because of the size of the pools of plasma used (200–10,000 donors per pool) and the fact that the methods used would probably not damage such a hardy virus, but experience with the products of plasma fractionation has so far failed to substantiate this fear.

d. *The transmission of antigens and anaphylactic antibodies by transfusion*—Following the ingestion of food, small amounts of unmodified protein may pass through the intestinal mucosa and enter the circulation. Foreign proteins may be injected into donors in the form of various types of vaccines and sera. For these reasons it is important that donors be used in the fasting condition and that those donors who have had recent inoculations should be excluded, since the transfusion of blood containing small amounts of foreign protein into a highly sensitive subject may result in severe anaphylactic symptoms. The passive transfer of hypersensitiveness of the anaphylactic type by virtue of the presence of antibodies in the donor's blood may also occur. Thus the use of very highly allergic donors or of those who have recently had injections of serum or vaccine such as rabies vaccine is also to be deprecated unless their blood is to

be used in plasma fractionation where it will be pooled with so many other bloods that antigens or antibodies will be diluted sufficiently to render them innocuous.

e. *The Rh factor in medicine*—Recent studies upon the importance of the Rh factor and the production of anti-Rh agglutinins as the result of pregnancy or multiple transfusions do not need to be elaborated here.<sup>10</sup> However, the fact that such antibodies may lead to fatal transfusion reactions and to erythroblastosis foetalis in the new-born indicates that facilities for determining the Rh status of donors and recipients must be available wherever transfusions of whole blood are used in obstetrical patients, in the new-born, or in patients who have received multiple transfusions.

This rather brief outline of some of the forms of disease, besides reactions due to incompatibility or pyrogens, which may result from the transfusion of blood or its products, indicates that strict control is necessary. Of the conditions mentioned, most are preventable by proper selection of donors and by good technique, but the problem of serum jaundice remains an enigma which needs solution. The possibility of disease transmission emphasizes both the need for proper regulations concerning blood donors and the value of centralized blood collection in a few depots where it is possible to maintain technical staffs who are competent to screen donors intelligently and to direct their blood into the different channels in which it may be used with safety. Moreover, it emphasizes the need for the provision of laboratory facilities and standardized reagents for blood grouping so that this essential determination can be made with accuracy.

2. *Use of blood in the prevention of disease*—The use of convalescent serum, normal serum, or placental extract in the control of measles has become a standard procedure in medical prac-

tice.<sup>11</sup> The recent demonstration that the gamma globulin fraction of normal human plasma is even more satisfactory will be discussed below. This fraction is also effective in the prevention of epidemic hepatitis. Since these two diseases are widespread and endanger the health of the public, there is every reason for health departments to provide these materials to physicians.

### 3. *Distribution of blood and blood derivatives for the treatment of disease—*

The assumption of responsibility by public health authorities for any phase of the care of patients with illnesses other than those which menace the health of the community is an extension of their functions which will be subjected to criticism. In this instance, its justification would appear to lie in the social and economic spheres. Blood and its derivatives have come to be recognized as essential adjuncts to good medical care, and unless they can be distributed to physicians under public auspices many patients will be deprived of them, at least until the cost of all blood derivatives is reduced very considerably and better facilities for distribution become available than at present.

### THE PLACE OF BLOOD AND ITS DERIVATIVES IN MODERN MEDICINE AND SURGERY

It is now possible to sketch the main outlines of a program for the most economical and efficient use of human blood in the treatment and prevention of disease based on methods which have been developed in the past few years for separating some of its many physiological components. In the following section an attempt will be made to review briefly the clinical uses of blood and its derivatives and some of the improvements in techniques which underlie them.

1. *Whole blood*—The war has demonstrated the crucial importance of whole

blood transfusion in repairing the results of hemorrhage, a major factor in the pathogenesis of wound shock. Although plasma and albumin have played an extremely useful rôle in saving lives simply because they could be transported and stored so easily, it has become quite clear that when a large amount of blood is lost, its replacement with plasma protein solution results in the development of anemia, which in turn will have untoward physiological effects unless corrected.<sup>12</sup> The widespread use of whole blood in recent campaigns has been made possible by two principal factors: rapid transportation by air and improvement in the anti-coagulant solution used. Refrigerated blood has been flown across both Atlantic and Pacific oceans after its collection in this country so rapidly that it could be used for a considerable period after its arrival on the fighting fronts. This would never have been feasible if the conventional sodium citrate solution had been used as an anti-coagulant. The life of stored blood under optimal conditions with this solution is scarcely more than five days. On the other hand, solutions have been devised which will increase the life of blood on storage to three or four weeks. The solution which has gained widest use is acid citrate dextrose (ACD) solution<sup>13</sup> which differs from sodium citrate in the presence of a small amount of glucose and the use of a mixture of sodium citrate and citric acid in order to produce a final pH of approximately 7, *i.e.*, slightly acid to the normal blood pH. These solutions, by prolonging the life of stored blood, diminish the danger of transmission of syphilis. Whether improved preservation of the red cell will increase the time of survival of the malarial parasite in whole blood remains to be determined. ACD solution is superior to the modified Rous-Turner solution recommended by DeGowin<sup>14</sup> simply because the amount

of fluid used is very much smaller, thus conserving transportation space and reducing the size of the infusion necessary to produce a given physiological effect.

Many proposals have been made to use whole blood in emergencies without cross-matching. Witebsky and his colleagues have shown that purified blood group substances A and B can be added to group O blood to neutralize its anti-A and anti-B isoagglutinins.<sup>15</sup> Such neutralized O blood may be used in emergencies without preliminary cross-matching except when there is reason to fear reactions dependent upon the Rh factor, *i.e.*, in obstetrical patients, the new-born, and in recipients of previous transfusions. However, the fact that plasma or albumin can be used for the emergency treatment of shock with almost complete freedom from reactions suggests that they might well be used to tide a patient over until his blood group is determined and compatible blood can be administered.

2. *Resuspended red blood cells*—Upon centrifugation, the first division of blood into its functional components can be made, *i.e.*, into cells and plasma. After removal of the plasma, the packed cells may be resuspended and used for the transfusion of patients in whom there is a deficiency of red cells but an adequate supply of plasma protein. This applies particularly to those forms of anemia for which transfusion provides the only available method of therapy, namely leukemia, aplastic anemia, and the hemolytic group of anemias. If whole blood can be kept for periods up to thirty days, there seems little reason why it should not be possible to keep resuspended cells for a similar period. Although red cells resuspended in saline have been safely administered to many patients, the useful life of the cell in saline is only about five days.<sup>16, 17</sup> Corn syrup has been proposed as a resuspension me-

dium,<sup>18</sup> and many investigations are now in progress which should ultimately indicate what type of solution is optimal for this purpose. If resuspended cells can be given a dating period of a month from the time of collection, it will mean that their distribution from blood depots to any part of the United States should be entirely feasible and that their safety could be controlled by insisting upon a sufficient period of storage to assure the destruction of agents such as *Treponema pallidum* or the *plasmodia* of malaria and to allow the completion of sterility tests. Since resuspended cells can be administered in concentrated suspensions and in larger amounts than whole blood without overloading the circulation, it is possible to shorten the period of treatment for patients with severe anemia.

3. *Plasma*—Plasma will undoubtedly be preferred in this country to serum, which has been extensively used in the British Commonwealth.<sup>19</sup> Although the latter may be filtered with ease to insure sterility, its preparation involves the loss of fibrinogen, and the red cells, occluded in the clot, cannot be used for resuspension. Plasma can be prepared in a number of forms, each of which has advantages for particular purposes. Liquid plasma, kept at room temperature to prevent the precipitation of certain proteins and lipoids will supply the colloid osmotic effect of plasma.<sup>20</sup> However, on storage at room temperature its labile components deteriorate and thus it is not effective for supplying prothrombin, fibrinogen, or hemophilic globulin.<sup>21</sup> If plasma is kept in the frozen state, it can be preserved for long periods of time unchanged and, when thawed rapidly, may be used to supply these various labile proteins. Its principal disadvantages are the expense of refrigeration equipment and the time necessary to thaw the material. Dried plasma is fairly well preserved but requires expensive

facilities for its preparation and must be reconstituted with water for use.<sup>22</sup> The value of plasma, (1) as a substitute for whole blood in the treatment of hemorrhage, (2) as the agent of choice in replacing the plasma lost in burns or peritoneal irritation, or (3) as a means of providing preformed protein for injection into hypoproteinemic patients with acute illnesses, has been amply demonstrated in the last few years.<sup>23, 24, 25</sup> To what extent plasma will be used in the future, however, remains to be determined since the further separation of plasma into its component parts makes it possible to administer in comparatively pure form many of the individual plasma proteins mediating different physiological functions.

#### 4. Plasma fractions—

a. *The process of plasma fractionation*—Plasma and whole blood have in the past been given for many conditions in which the patient suffered from a deficiency of only one particular component of plasma. Thus, in hemophilia, there is a marked prolongation of clotting time due to a deficiency in hemophilic blood of one of the normal plasma globulins.<sup>26</sup> The transfusion of fresh plasma containing this protein results in a prompt fall of clotting time to normal just as does the addition of a small amount of fresh plasma to hemophilic blood *in vitro*.<sup>27</sup> The transfusion of 100 or 200 ml. of fresh plasma at frequent intervals to hemophilic patients at times of hemorrhage or when essential surgical procedures are carried out is time-consuming and wasteful, since the actual amounts of the particular protein needed by the patient are very small. If this anti-hemophilic factor were made available in relatively pure form, the material could be given in a very small injection, thus simplifying treatment for both doctor and patient, and much larger amounts of material could be administered when necessary to severe cases without the unpleasant

side effects which may go with massive transfusions of blood or plasma. It is this type of reasoning which lies behind the program of plasma fractionation.

Methods which make it possible to separate plasma proteins on a large scale into relatively pure fractions have been developed by Cohn, Strong, Oncley, Hughes and Armstrong and their associates.<sup>28</sup> They depend primarily upon the precipitation of different plasma protein fractions by varying concentrations of alcohol at low temperatures with control of the temperature, hydrogen ion concentration, ionic strength, and protein concentration of the solution. Such a system with five different variables makes it possible to define optimal conditions for the separation of the many plasma proteins. Moreover, the use of alcohol substitutes for the clumsy process of dialysis the desiccation of precipitates from the frozen state with evaporation of the small amounts of alcohol and water carried down with them, leaving the proteins as dry powders which may be kept until needed for final packaging. This program is still in the phase of development, and, although a number of products have been derived from the basic fractions, there are other products with potential clinical uses which have not yet been brought to the point of adequate purification and clinical trial. The more therapeutic agents that can be produced from a given amount of plasma, the more economical such a process becomes both from the standpoint of the costs of production and the better utilization of human blood.

This system of plasma fractionation\* which has been developed with blood

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\* A series of papers describing the chemical characteristics of the products of plasma fractionation and the physiological, pathological, immunological, and clinical studies made with them will be found in a single number of the *Journal of Clinical Investigation*, to which the reader is referred for details.<sup>29</sup> Pertinent publications not included in this series will be referred to in the text.

collected by the American Red Cross as a result of a group of studies carried on under various auspices, but principally under contracts, recommended by the Committee on Medical Research, with the Office of Scientific Research and Development, and with the coöperation of the U. S. Navy, gives rise to five primary fractions. Fraction I contains most of the fibrinogen and serves as the source of its various derivatives. The next fraction, Fraction II + III, is a combined fraction, containing alpha, beta, and gamma globulins. It is separated by subfractionation into a gamma globulin fraction containing most of the antibodies of the plasma, a fraction containing prothrombin, a fraction in which the isohemagglutinins are concentrated provided the plasma pool is made up from bloods of one group only, and a lipoprotein fraction. Fraction IV contains alpha and beta globulins, some of them lipoproteins and others water-soluble and containing but little lipid. Fraction V contains most of the albumin of the plasma. Fraction VI contains a very small amount of protein and consists mainly of salts and soluble material not precipitated during the process of fractionation. In so far as possible, the whole process has been designed to separate the various protein components of plasma so as to preserve the functional integrity of all.<sup>30</sup> The stability of these fractions varies markedly, and consequently this goal has not always been perfectly realized. However, as knowledge has accumulated, it has been possible to improve the process progressively in such a way as to carry the separation of the various components to a point where they may be preserved in stable form for future use.

With this very brief outline of the major fractions, we shall turn to a consideration of the applications which have been found for the final products prepared from them.

(1) *Products of fibrinogen and thrombin*—The proteins known to be concerned with blood coagulation are fibrinogen, prothrombin, anti-hemophilic globulin, and fibrinolysin. The processing of fibrinogen and prothrombin to stable and satisfactory products for clinical use is now well under way and considerable amounts of material have been delivered for use by the armed forces.

(a) *Fibrin foam and thrombin*—Fibrin foam consists of a coagulum of fibrinogen and thrombin which is beaten with air to attain a spongy consistency and which can then be cut into pieces of the desired size, desiccated and sterilized by heat. In this form it is stable, dry, and brittle. Before use, it is soaked in a solution of reconstituted thrombin which renders it flexible and permeates it, so that when it is applied to a bleeding area, the blood welling up into the foam is promptly coagulated and thus the foam becomes incorporated in a clot which extends into it from the bleeding surface. The great advantage of fibrin foam is that it consists of human proteins, is absorbable, and can be left *in situ*, without subsequent reaction. It has proved extremely valuable as a hemostatic agent in surgery, particularly in neurosurgery. Thrombin is prepared by conversion of the prothrombin separated from Fraction II + III, and is then dried from the frozen state since it is unstable in solution. Fibrinogen itself is likewise unstable but can also be kept when dried from the frozen state. Powdered fibrinogen and thrombin have been studied as aids in various surgical procedures, for example as a means of forming a coagulum around a renal stone so it may be removed without crumbling or as a physiological glue for the application of skin grafts.

(b) *Fibrin film*—By various manipulations, fibrinogen may be converted into a number of types of sub-

stances, the properties of which will depend upon the conditions under which the clot is formed and its subsequent chemical, mechanical, and thermal treatment. Fibrin film is an elastic, tough, semi-transparent membrane, which has been found quite useful as a substitute for the dura mater covering the brain when this has been removed at operation or as a result of trauma. Here the film is slowly absorbed and replaced by connective tissues without inciting the formation of adhesions between the brain and its coverings.<sup>31</sup>

(c) *Antihemophilic globulin*—Fraction I has been found to contain the greatest concentration of antihemophilic activity of any of the plasma fractions.<sup>32</sup> Studies of the usefulness of Fraction I in repairing the coagulation defect of hemophilia upon intravenous or intramuscular injection have been made, and indicate that injections of from 200–400 mg. of Fraction I are as effective as 100–200 ml. of plasma in bringing the coagulation time back to normal.<sup>33, 34</sup> Further clinical studies in this disease are indicated, when sufficient Fraction I becomes available over and above the needs of the armed forces for fibrin foam and film.

(2) "*Gamma*" globulin (*immune serum globulin*)—The gamma globulin fraction of plasma contains all the antibodies against infectious agents normally present in pooled plasma for which clinical or laboratory tests have been made. The degree of concentration of these antibodies parallels quite closely the degree to which gamma globulin is concentrated from the plasma, as determined chemically. Thus present preparations for the American Red Cross and the armed forces consist of a 16.5 per cent solution of protein, of which more than 95 per cent is gamma globulin. This represents an approximately 25-fold concentration of this protein over its concentration in plasma and it has been found that antibodies

such as diphtheria antitoxin, scarlatinal antitoxin, complement-fixing and mouse-protective antibodies to influenza A virus, and agglutinins for the H antigen of the typhoid bacillus are concentrated from 15 to 25-fold. Antibody studies on gamma globulin prepared from bloods collected in different areas of the country at different times have revealed a few interesting variations.<sup>35</sup> Thus antibodies to influenza A approximately doubled after the epidemic of the winter of 1943–1944. Diphtheria antitoxin titers are lower in California and relatively high in the Southwest. Early in the program of plasma fractionation, Robinson<sup>36</sup> suggested that such a globulin fraction of pooled adult plasma might be useful in the prevention and attenuation of measles. This has turned out to be the case and numerous publications indicate that human gamma globulin provides a safe and reliable agent for either the prevention or modification of measles, depending upon the dosage used.<sup>37, 38, 39</sup> Its principal advantages are its availability, safety, and uniformity. Recently Stokes and Neeff have demonstrated that gamma globulin is very potent as an agent for the prevention of epidemic hepatitis.<sup>40</sup> Because of the usefulness of this material in the prevention of measles and the fact that more gamma globulin became available as a result of the plasma fractionation program than was necessary to meet the requirements of the armed forces, the American Red Cross has arranged for its distribution to the public through public health agencies.<sup>41</sup>

It is obvious that from the standpoint of the public interest, it would be extremely unwise to use globulin for the prevention of measles or hepatitis every time that a patient was exposed to one of these diseases, since this would merely result in the gradual development of a very large susceptible population. On the other hand it is

important to be able to prevent measles in such institutions as hospitals or in particular individuals, and gamma globulin has proved excellent for this purpose. Moreover, the evidence indicates that modification of measles after known exposure by the use of small doses of gamma globulin results in a diminution of those complications which make measles a serious disease. Adequate statistical evidence must be brought forward, when sufficient data accumulate, to prove, as is generally believed, that such mild attacks of measles establish a permanent immunity.

Unfortunately not every communicable disease can be prevented by the administration of gamma globulin. The results so far have been rather unsatisfactory where it has been administered to patients exposed either to mumps or chicken pox. A recent study in New York State, using gamma globulin as a source of poliomyelitis antibody in very large doses, has confirmed the previous findings with convalescent serum that administration of antibody during the pre-paralytic stage of the disease has no effect on its outcome.<sup>42</sup>

There is a field for further investigation in the concentration of antibodies from convalescent sera, particularly in the case of scarlet fever and mumps, where there is reason to believe that the globulin fraction might be useful in either prevention or treatment. McGuinness demonstrated that the administration of gamma globulin from convalescent mumps plasma on the first day of mumps parotitis appeared to diminish the incidence of orchitis, whereas globulin from normal plasma failed to do so.<sup>43</sup> Convalescent plasma provides as satisfactory a source of albumin, thrombin, fibrinogen and other plasma proteins as normal plasma and therefore in a blood procurement program of the future, its collection and fractionation so that the antibodies can be preserved until needed may be very

worth while. Another field in which only a start has been made is in the production of human hyperimmune plasma. Hyperimmunization of humans has been used for the development of serum against *Hemophilus pertussis*, the etiologic agent of whooping cough. Such serum appears to have definite value in passive protection against whooping cough and probable value in the treatment of the disease.<sup>44</sup> It has been subjected to fractionation, and hyperimmune pertussis globulin is now commercially available.

(3) *Isohemagglutinins* — Since proper blood grouping is essential for the safe use of whole blood transfusions, it is important to have potent, standardized reagents for this purpose. By pooling plasmas of one group only at the start of the fractionation process, it is possible to obtain from Fraction II + III very satisfactory isohemagglutinin preparations. It has recently been shown that, although good A (anti-B) globulin can be obtained from Group A bloods, better B (anti-A) globulin is obtained from pooled O bloods absorbed with B cells than from B bloods.<sup>45</sup> Since O and A donors are found in approximately equal number in the population and the B donors provide the right amount of B cells for absorption of the anti-B agglutinins from O blood, this greatly simplifies isohemagglutinin preparation.

(4) *Human serum albumin* — The albumin fraction of plasma makes up about 55 per cent of the total plasma proteins and is largely responsible for their osmotic effect. Albumin is not only more potent osmotically but less viscous in solution, more soluble, and more stable than most of the plasma globulins. Thus, when separated, it is possible to dispense it in a 25 per cent solution which has the viscosity of whole blood with a hematocrit of 50. Moreover, albumin is a water-soluble protein and thus may be dissolved in



water or any of the commonly used intravenous solutions. One hundred ml. of a 25 per cent albumin solution has an osmotic effect equivalent to 500 ml. of citrated plasma, and provides a concentrated protein solution which is stable enough to be transported for long distances and stored at ordinary temperatures and which, when properly prepared, gives an extremely low incidence of reactions on intravenous injection. Because it does not have to be reconstituted and can be injected rapidly, it is the agent of choice for emergency administration in cases of shock. The compactness of albumin would make it extremely convenient for a practising physician to carry with him, just as it is convenient for front-line use in the armed forces. Albumin may be combined with any desired amount of parenteral fluid, and a 5 per cent solution of albumin in saline or glucose is approximately isosmotic and isotonic with human plasma. Thus albumin might easily replace plasma since it supplies the osmotic effect needed in shock and also the particular plasma protein which is deficient in most cases of hypoproteinemia. In the treatment of hypoproteinemia, the fact that the albumin can be given in a small volume of fluid containing very little sodium ion makes it far superior to plasma, in which there is a much larger amount of sodium present, which may aggravate the edema in certain cases.<sup>46, 47</sup> The small volume and safety of albumin is a great convenience in pediatric practice. To date, albumin has had comparatively little civilian use for the simple reason that all that is being produced is required by the armed forces.

(5) *Other fractions of plasma—*

No mention has been made of clinical uses for most of the alpha and beta globulins, among which are found the lipoproteins associated with the transport of fat as well as certain enzymes

and hormones which circulate in small amounts. Clinical and chemical studies are under way to investigate the possible applications of this remaining group of plasma proteins.

This brief resumé will serve to show the manifold uses for blood and its products in the clinic. It is clear that considerable further experience will be necessary before the most effective scheme for the utilization of blood can be worked out in detail. It is conceivable that whole blood, resuspended cells, and plasma fractions may ultimately provide all the therapeutic agents needed, but at present there are many who feel that plasma should be included. Whereas whole blood has certain very important clinical uses, in many other instances it should be replaced by the use of resuspended cells on the one hand or plasma or its fractions on the other. Moreover, the development of plasma fractionation provides many new therapeutic agents for general use such as albumins, gamma globulin, and fibrin foam with thrombin, which were not previously available. An important by-product of the plasma fractionation program is the introduction into the biologics industry of new methods for the separation of proteins—methods which are applicable to the purification of animal sera, vaccines, and tissue extracts. The remainder of this review will be concerned with a discussion of some of the possible methods for making blood and its derivatives generally available on an equitable basis.

ORGANIZATION OF A BLOOD PROGRAM

The administrative problems involved in a comprehensive blood program may be divided into several phases—those of procurement, processing, and distribution. Let us assume that the objective is to provide the optimal amount of blood and its derivatives to all who need them, in the safest possible form, and

at the minimum public expense. There are numerous ways of attaining this objective in each phase of the program and it is probable that in different parts of the country, with their differing facilities and needs, different methods may prove best. It is to be hoped that various methods will be tried, so that it will be possible to make comparisons between them. The integrated program carried out for the armed forces during the war in this country as well as in the British Commonwealth has been responsible for a tremendous expansion of facilities for the procurement and processing of blood, and has provided invaluable experience, which should be carefully studied by all those charged with the responsibility of developing blood programs for the civil population in the future.<sup>48</sup> Several states have already launched programs or have laid plans to do so. Both Michigan<sup>49</sup> and North Dakota<sup>50</sup> have begun to collect, process, and distribute plasma on a state-wide basis, while Massachusetts<sup>51</sup> is planning a program for the collection of blood, processing of plasma and plasma fractions, and distribution of the products to physicians of the state.

The rôle of public health authorities in such programs may vary from a minimum of setting up proper regulations and standards to a maximum of control and management of every phase of the program. The National Institute of Health already assures the safety of commercially available blood derivatives through control of all biological products produced for interstate sale.

1. *Blood procurement*—There are two methods of obtaining human blood, either by appeal to donors to give their blood free, or by purchase in the open market. Both methods become simpler as the public becomes educated to blood donation. There should be little difficulty in maintaining an adequate flow of blood on a voluntary basis after

the war is over. In London, a volunteer blood transfusion service under the Red Cross has been successfully operated since 1921. Hospital blood banks have been able to keep on hand adequate supplies collected from relatives and friends of patients in many cities where the Red Cross Blood Donor Service was recruiting large numbers of donors at the same time. The motives of self-interest and community spirit can be utilized. In Michigan, for example, plasma is distributed in any community on a basis of blood contributed, a certain percentage of the total amount collected in a given community being returned to it as plasma, and a smaller amount being kept in a central pool for emergency use in any part of the state where it might be needed. Hospital blood banks operate on the same principle, but on a smaller scale. The use of paid donors would be utterly impossible for any broad blood program if donors had to be paid at the previous conventional rate of \$5 per 100 ml. of blood. However, if the fees paid to donors can be reduced to very much smaller sums, then the use of paid donors becomes somewhat more feasible from an economic standpoint.

The procurement of blood might be carried out either by the Red Cross, which has done such a magnificent job in the collection of blood for the armed forces, by professional teams under the health department as in Michigan, through established hospital blood banks, or by a commercial laboratory which might contract to supply local needs through the use of paid donors. The National Red Cross has ruled that local chapters may collaborate in the procurement of blood with health agencies if they so desire, provided certain principles are adhered to, among which are: voluntary blood donations only, technical responsibility wholly in the hands of a reliable medical or health agency, a unified program of volunteer

blood donor service in any one community to serve all acceptable hospitals and licensed physicians, and no charge for blood or blood derivatives to be made to physicians, hospitals, clinics, or patients.<sup>52</sup> There is much to be said for a unified blood procurement program for a particular area, from the standpoint of economy, technical competence of the staff, and safety of both donor and recipient.<sup>53</sup> By steering blood from donors in various categories into whole blood, plasma, or plasma fractionation, the available donors can be utilized most efficiently with the least chance for transmission of disease.

2. *Blood processing*—The processing of blood to liquid or frozen plasma is being carried out quite successfully in many hospital blood banks in the United States today. On the other hand, the production of dried plasma or plasma fractions involves a large initial expenditure for equipment and a technical staff which it would not be feasible for any one hospital to maintain unless they were processing blood derivatives for a large area. This could be done most satisfactorily and economically either by the commercial laboratories which have had so much experience with the process during the war or by the laboratories of some of the larger state health departments. The actual cost of the plasma fractionation process is remarkably low, and the more products that can be derived from plasma, the less expensive each of them becomes. Once the initial outlay for equipment is taken care of, the costs of plasma fractionation should be considerably less than those required for the procurement and distribution of blood, particularly if the donor must be paid.

3. *Distribution*—In no phase of a blood program would it seem to be so important for a public agency to play a rôle as in the field of distribution. The cost of the plasma or albumin re-

quired for the treatment of a single patient with hypoproteinemia or of the resuspended cells required by a patient with aplastic anemia, for example, no matter what the method of blood procurement or processing, will exceed the capacity to pay of most patients with these conditions. Experience has shown that in those hospitals with blood and plasma banks, much larger amounts of blood and plasma are used than in hospitals not so equipped, indicating that the needs exceed present civilian supplies. It is conceivable that the most economical way to take care of this problem would be to have all blood derivatives prepared by the commercial laboratories, with the cost of their provision to the medically indigent borne by public welfare agencies. On the other hand, the health department might procure and distribute at public expense the various blood derivatives discussed above. Commercial distribution on a competitive basis involves rather high costs compared to distribution by public agencies. Whether or not the public agency acquires the finished products from the commercial laboratories, or procures the blood and pays a commercial laboratory for the processing, or carries out the whole program on its own is of little consequence and will probably vary from one locality to another.

#### SUMMARY

An attempt has been made to review the various aspects of the use of blood and its derivatives in the prevention and treatment of disease from the standpoint of those concerned with the public health. The latter have an important regulatory function in seeing to it that the public is protected from disease transmitted or produced by blood and blood derivatives, and that those blood products required for the control of communicable disease should be made readily available. Moreover, there is

much to be said for the distribution of blood and its derivatives for use in the treatment of disease at public expense since this should result in an equitable system of distribution of these essential therapeutic agents regardless of the capacity of the patient to pay. Some of the manifold uses for blood and its various derivatives — resuspended cells, plasma, the products of plasma fractionation—have been reviewed, and brief mention has been made of the administrative mechanisms that may be brought into play in order to provide an adequate supply of blood and blood derivatives to the civilian population in this country.

## REFERENCES

1. Morgan, H. J. Factors Conditioning the Transmission of Syphilis by Blood Transfusion. *Am. J. M. Sc.*, 189:808-813, 1935.
2. Turner, T. B. and Diseker, T. H. Duration of Infectivity of *Treponema pallidum* in Citrated Blood Stored under Conditions Obtaining in Blood Banks. *Bull. Johns Hopkins Hosp.*, 68:269-279, 1941.
3. Rubinstein, A. D., Shulman, M. H., and Merrill, D. The Hazard of Transfusion Malaria after This War. *New England J. Med.* (In press).
4. Homologous Serum Jaundice: Memorandum Prepared by Medical Officers of Ministry of Health. *Lancet*, 1:83-88, 1943.
5. Jaundice Following Yellow Fever Vaccination. Editorial. *J.A.M.A.*, 119:1110, 1942.
6. Findlay, G. M., and Martin, N. H. Jaundice Following Yellow Fever Immunization. *Lancet*, 1:678-680, 1943.
7. For, J. P., Manso, C., Penna, H. A., and Madureira, Para. Observations on the Occurrence of Icterus in Brazil Following Vaccination Against Yellow Fever. *Am. J. Hyg.*, 36:68-116, 1942.
8. Lucke, B., Lt. Col., MC. I. The Pathology of Fatal Epidemic Hepatitis. *Am. J. Path.*, 20:471-593, 1944.
9. Lucke, B., Lt. Col., MC. II. The Structure of the Liver After Recovery from Epidemic Hepatitis. *Ibid.*, 594-619.
10. Diamond, L. K. The Clinical Importance of the Rh Blood Type. *New England J. Med.*, 232: 447-450, 475-480, 1945.
11. McKhann, C. F. The Prevention and Modification of Measles. *J.A.M.A.*, 109:2034-2037, 1937.
12. Beecher, H. K., Lt. Col., MC, AUS. Preparation of Battle Casualties for Surgery. *Ann. Surg.*, 121:785-786, 1945.
13. Loutit, J. F., and Mollison, P. L. Advantages of Disodium Citrate Glucose Mixture as Blood Preservative. *Brit. M. J.*, 2:744-745, 1943.
14. DeGowin, E. L., Harris, J. E., and Plass, E. D. Studies on Preserved Human Blood. I. Various Factors Influencing Hemolysis. *J.A.M.A.*, 114:850-855, 1940.
15. Klendshoj, N. C., McNeil, C., Sevanson, P., and Witebsky, E. Transfusion of Conditioned Universal Blood. *Arch. Int. Med.*, 70:1-10, 1942.
16. Taylor, E. S., Thalheimer, W., and Cooksey, W. B. The Organization of a Red Blood Cell Transfusion Service. *J.A.M.A.*, 124:958-960, 1944.
17. Cooksey, W. B., and Horwitz, W. H. Use of Salvaged Red Cells. *Ibid.*, 961-964.
18. Thalheimer, W., and Taylor, Major E. S., MC, AUS. Transfusion of Centrifuged Human Type O Cells Resuspended and Stored in Ten Per Cent Corn Syrup. *J.A.M.A.*, 127:1096-1101, 1945.
19. Vaughan, J. M. The Transfusion of Blood and Blood Derivatives under Emergency Conditions. *J.A.M.A.*, 123:1020-1025, 1943.
20. Lozner, E. L., and Newhouser, L. R. Preservation of Normal Human Plasma in the Liquid State. I. A Statistical Study of 1,751 Administrations. *J. Clin. Investigation*, 23:343-349, 1943.
21. Taylor, F. H. L., Lozner, E. L., Davidson, C. S., Tagnon, H. J., and Newhouser, L. R. II. Comparative *in Vitro* Studies on the Physiologic Activity of Labile Constituents of Liquid and Frozen Plasma. *Ibid.*, 351-356.
22. Strumia, M. M., and McGraw, J. J. Frozen and Dried Plasma for Civil and Military Use. *J.A.M.A.*, 116:2378-2382, 1941.
23. Strumia, M. M., and McGraw, J. J. Blood Plasma and Its Place in the Practice of Medicine with Special Consideration to the Problems of Preservation. *J.A.M.A.*, 118:427-429, 1942.
24. Elliott, J., Busby, G. F., and Tatum, W. L. Some Factors and Observations on Preparation and Preservation of Dilute Plasma. *J.A.M.A.*, 115:1006-1008, 1940.
25. Mahoney, E. B., Kingsley, H. D., and Howland, J. W. The Therapeutic Value of Preserved Blood Plasma. *Am. Surg.*, 113:969-986, 1941.
26. Patek, A. J., Jr., and Taylor, F. H. L. Hemophilia: Some Properties of Substance Obtained from Normal Human Plasma Effective in Accelerating Coagulation of Hemophilic Blood. *J. Clin. Investigation*, 16:113-124, 1937.
27. Lozner, E. L., and Taylor, F. H. L. Coagulation Defect in Hemophilia: Studies of Clot-Promoting Activity Associated with Plasma Euglobin in Hemophilia. *J. Clin. Investigation*, 18:821-825, 1939.
28. A series of papers describing the methods of plasma fractionation are now in process of preparation for publication by the members of the Department of Physical Chemistry, Harvard Medical School.
29. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. I-XXIII. *J. Clin. Investigation*, 23:417-606, 1944.
30. Cohn, E. J. Blood Proteins and Their Therapeutic Value. *Science*, 101:51-56, 1945.
31. Ingraham, F. D., and Bailey, O. T. The Use of Products Prepared from Human Fibrinogen and Human Thrombin in Neurosurgery. *J. Neurosurg.*, 1:23-39, 1944.
32. Taylor, F. H. L., Davidson, C. S., Tagnon, H. J., Adams, M. A., MacDonald, A. H., and Minot, G. R. Studies in Blood Coagulation. The Coagulation Properties of Certain Globulin Fractions of Normal Human Plasma *in vitro*. *J. Clin. Investigation*, 24 (Sept), 1945. (In press.)
33. Minot, G. R., Davidson, C. S., Lewis, J. H., Tagnon, H. J., and Taylor, F. H. L. The Coagulation Defect in Hemophilia: The Effect in Hemophilia of the Parenteral Administration of a Fraction of the Plasma Globulins Rich in Fibrinogen and Anti-Hemophilic Activity. *Ibid.*
34. Diamond, L. K., and Gregory, E. Unpublished data.
35. Enders, J. F., and Sullivan, J. C. Unpublished data.
36. Cohn, E. J., Luetscher, J. A., Jr., Oncley, J. L., Armstrong, S. H., Jr., and Davis, B. D. Preparation and Properties of Serum and Plasma Proteins: III. Size and Charge of Proteins Separating on Equilibration Across Membranes with Ethanol-Water

Mixtures of Controlled pH, Ionic Strength and Temperature. *J. Am. Chem. Soc.*, 62:3396-3400, 1940. See footnote p. 3398.

37. Janeway, C. A. Clinical Use of Products of Human Plasma Fractionation. I. Albumin in Shock and Hypoproteinemia. II. Gamma Globulin in Measles. *J.A.M.A.*, 126:674-680, 1944.

38. Janeway, C. A. Use of Concentrated Human Serum Gamma Globulin in the Prevention and Attenuation of Measles. *Bull. New York Acad. Med.*, 21:202-222, 1945.

39. Greenberg, M., Frant, S., and Rutstein, D. D. "Gamma Globulin" and "Placental Globulin," a Comparison of Their Effectiveness in the Prevention and Modification of Measles. *J.A.M.A.*, 126:944-947, 1944.

40. Stokes, J., Jr., and Neefe, J. R. The Prevention and Attenuation of Infectious Hepatitis by Gamma Globulin. *J.A.M.A.*, 127:144-145, 1945.

41. Surplus Immune Serum Globulin for Measles. (Normal Serum Gamma Globulin [Human]). *J.A.M.A.*, 125:638-639, 1944.

42. Perkins, J., and Bahlke, A. To be published.

43. McGuinness, A. C., and Gellis, S. S. A Study on the Prevention of Mumps Orchitis by Gamma Globulin. To be published.

44. Felton, H. M. The Status of Passive Immunization and Treatment in Pertussis by the Use of Human Hyperimmune Serum. *J.A.M.A.*, 128:26-28, 1945.

45. Melin, M. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XXV. The Preparation of Anti-A Isoagglutinin Reagents from Mixed Blood of Groups

O and B. *J. Clin. Investigation*, 24 (Sept), 1945. (In press.)

46. Scatchard, G., Strong, L. E., Hughes, W. L., Jr., Ashworth, J. N., and Sparrow, A. H. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XXVI. The Properties of Solutions of Human Serum Albumin of Low Salt Contents. *J. Clin. Investigation*, 24 (Sept), 1945. (In press.)

47. Thorn, G. W., Armstrong, S. H., Jr., Dickerson, V. C., Woodruff, L. N., and Tyler, F. H. Chemical, Clinical and Immunological Studies on the Products of Human Plasma Fractionation. XXVII. Use of Salt-Poor Concentrated Human Serum Albumin Solution in the Treatment of Chronic Bright's Disease. *Ibid.*

48. Taylor, Major E. S., MC, AUS, and Heiss, M. E. American Red Cross Blood Donor Service. *J.A.M.A.*, 124:1100-1103, 1944.

49. Young, C. C. Michigan's Free Plasma Service to All Physicians. *Hospitals*, 18:51-53, 1944.

50. Koons, M. Free Plasma for North Dakotans. *Pub. Health Rep.*, 60:85-99, 1945.

51. Edsall, G. Civilian Blood Bank Program for Massachusetts. *Massachusetts Health J.*, 26: 5-8, 1945.

52. The American Red Cross Announcement of New Policy Governing the Participation of Red Cross Chapters and Civilian Blood Donor Services. *J.A.M.A.*, 128:728-729, 1945.

53. Boynton, M. H., and Taylor, Major E. S., MC, AUS. Complications Arising in Donors in a Mass Blood Procurement Project. *Am J. M. Sc.*, 209:421-436, 1945.

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# Typhoid Vaccine Studies X

## The Suitability of Vi Antigen as an Auxiliary Immunogen for Typhoid Vaccine

### *Progress Report*

MAJOR GEORGE F. LUIPPOLD, S.N.C.\*

*Division of Typhoid Research, Army Medical School, Washington, D. C.*

THE extraction of an active anti-typhoid immunogenic fraction (Vi antigen) from a coliform organism designated by Kauffmann as "*S. coli* 5396/38"<sup>1</sup> was announced last year in a preliminary report by Luippold.<sup>2</sup> Since this announcement, studies have been made on the stability of the Vi extract under a variety of conditions, on its immunogenic activity when combined with bacterial vaccines, and on its toxicity for laboratory animals and for man. Also, methods of preparation and standardization have been simplified and improved. These factors are of preliminary importance when considering the usefulness of any substance as an auxiliary immunogen for typhoid vaccine. The only remaining property of practical importance (should Vi extract qualify in the others cited above) is its effectiveness in man. This will be considered in a separate report to be submitted at a later date. The present communication deals with the preparation, stability, and toxicity of the Vi extract, and the feasibility of employing it to reinforce a bacterial vaccine.

#### EXPERIMENTAL

A brief review of the work leading up

to publication of the preliminary report cited above is desirable in order to introduce the studies referred to in the title of this paper.

#### THE EFFECTIVENESS OF VI EXTRACT AS AN ANTITYPHOID IMMUNOGEN

Upon extraction of this substance, the first step was to establish its position among previously recommended preparations of typhoid antigens in respect to immunogenic potency. As stated in the preliminary report, the product used for experimentation was a dispersion of the dried material obtained by precipitating out with alcohol or acetone those substances on *S. coli* 5396/38 soluble in dilute (1 per cent) HCl. Thus, the Vi extract could be compared on a dry-weight basis with two preparations of antigenic fractions of the typhoid bacillus, one of which was derived from a tryptic digest (Antigen 1), the other from an autolysate (Antigen 2). These products were titrated for immunogenic potency simultaneously with the Vi extract in a series of four individual active-immunization tests in mice. Details and results of these titrations have been included in Table 1.

It is apparent, from these results, that per unit weight of material, the Vi extract is somewhat superior to conventionally prepared antigenic fractions of the typhoid bacillus, when mice immu-

\* With the technical assistance of Technician Third Grade Welden W. DeVore and Technician Fifth Grade Milton Toporek, Medical Department, A.U.S.

TABLE 1

*Comparison of Immunogenic Potency of Antigen 1, Antigen 2, and Vi Extract*

Amount of Antigen Administered per Mouse (Mg.)	Combined Results of 4 Individual Tests Wherein Respective Groups of Mice Were Challenged with from 100 to 1,000 m.l.d. of Typhoid Organisms 6 Days After Receiving the Doses Listed in Column on Left of the Materials Designated Below (No. of Deaths/No. of Mice)		
	Antigen 1	Antigen 2	Vi Extract
0.005	0/16	0/16	0/16
0.0005	0/16	0/16	1/16
0.00005	5/16	2/16	0/16
0.000005	12/16	9/16	3/16
0.0000005	8/8	6/8	4/8

nized with these substances are challenged by infective (invasive) doses of *E. typhosa*.

#### EFFECTIVENESS OF VI EXTRACT IN THE PRESENCE OF PARATYPHOID ORGANISMS

Although there has never been any intention of replacing typhoid organisms in TAB vaccine with the Vi extract, the antityphoid potency of a product in which such a substitution had been made was determined, merely to detect any interference with the activity of the extract which might be exerted by the paratyphoid organisms.

Accordingly, a product consisting of 250 million of each of the paratyphoid A and B organisms and 0.01 mg. of dried Vi extract per ml. was prepared to represent ViAB. This was matched against TAB vaccine containing the

same numbers of paratyphoid organisms and 1,000 million typhoid bacilli per ml.—the stock TAB vaccine in current use. Appropriate controls were included, as will be noted in Table 2 where details and results of this comparison have been recorded.

It will be seen that the Vi extract retained its activity in the presence of paratyphoid organisms, and that ViAB was quite as effective an antityphoid agent as was TAB vaccine. However, it is not implied by this that typhoid organisms could advisably be replaced by the Vi extract, in practice. All typhoid immunogens should be present in a vaccine. Vi antigen is considered as merely a supplementary substance which can be added advantageously to the other antigens (contained in the cells) of the typhoid bacillus.

TABLE 2

*Comparison of Immunogenic Potency of TAB Vaccine and ViAB*

Amounts of TAB, ViAB, and of the Control Materials Administered per Mouse (ml.)	Result of Challenging Dose of 100,000 Typhoid Organisms in Mice Which Had 6 Days Previously Received the Doses Listed in Column on Left of the Materials Designated Below (No. of Deaths/No. of Mice)			
	TAB Vaccine	ViAB Mixture	Typhoid Vaccine	Para A & B Vaccine
0.05	1/4	0/4	0/4	3/4
0.005	0/4	1/4	1/4	4/4
0.0005	3/4	0/4	2/4	4/4
0.00005	4/4	1/4	4/4	...
0.000005	4/4	3/4	4/4	...

### COMPARATIVE IMMUNOGENIC POTENCY OF TAB AND TAB VI

Having established the freedom of activity of Vi extract in the presence of paratyphoid organisms, it was only natural to choose TAB vaccine as the first product to be fortified with the extract. Although the TAB vaccine used by the U. S. Army has given a good account of itself, there has never been any assumption on our part that it could not be improved. The addition of Vi extract appeared to be a simple and direct method of improving this product which has already been tested in the field, without altering any of its original components.

Evidence of such enhancement was sought as follows: To 50 ml. of stock TAB vaccine was added 0.5 mg. of the Vi extract. This TABVi was titrated for antityphoid potency against the same lot of TAB in a series of three individual tests. Details and results have been recorded in Table 3.

The antityphoid potency of TAB vaccine was increased approximately 10-fold by the addition of 2,000 Typhoid Immunogenic Units<sup>3</sup> (in the form of Vi extract) per ml. of vaccine. Experimentally, at least, fortification of TAB vaccine with Vi extract is both feasible and demonstrably effective.

NOTE: The foregoing is the definitive work on which was based the suggestion in the preliminary report that Vi extract be used as a fortifying agent for TAB vaccine. The work reported below was done subsequently in order to determine the suitability of Vi extract for such use, from the standpoints of preparation, standardization, stability, and toxicity.

### PREPARATION OF VI EXTRACT

The original announcement of this Vi extract<sup>2</sup> stated that the substance was extracted from V-form organisms with dilute solutions of HCl, precipitated out with acetone, and recovered as a light-brown powder. It has since been found, however, that the cleared (centrifugalized) digest of organisms in HCl is a preferable form with which to work, and such a product is recommended, prepared as described below.

The culture designated *S. coli* 5396/38 is grown to produce a maximum predominance of V-form colonies. This is accomplished by colony selection and by incubation at room temperature (20° C.-25° C.). In our experience, we have been unable to obtain a 100 per cent V-form growth, there being invariably a sprinkling (about 1 per cent) of the W-form present.

When the culture has become predominantly V-form, massive transplants

TABLE 3  
*Comparative Immunogenic Potency of TAB and TABVi*

Test No.	Designation of Immunizing Substance	Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Materials Designated in Column on Left in the Amounts (ml.) Indicated Below			
		(No. of Deaths/No. of Mice)			
		0.05	0.005	0.0005	0.00005
1	TAB	0/8	0/8	6/8	7/8
	TABVi	0/8	0/8	0/8	7/8
2	TAB	0/8	2/8	6/8	8/8
	TABVi	0/8	0/8	2/8	6/8
3	TAB	0/8	0/8	4/8	8/8
	TABVi	0/8	0/8	0/8	5/8



TABLE 4  
*Optimum Extraction Time for Vi Antigen*

Period of Contact (Organisms in 1 Per cent HCl)	Results of Injecting 50,000 Typhoid Organisms in Mice Which 7 Days Previously Had Received the Doses (ml.) Indicated Below of Cleared Solutions of Vi Antigen Obtained After the Periods of Extraction Designated in Column on Left (No. of Deaths/ No. of Mice)		
	0.0005	0.00005	0.000005
1 hour	0/7	0/7	5/7
1 day	0/7	0/7	3/7
2 days	0/7	0/7	7/7
3 days	0/7	0/7	6/7
10 days	0/7	0/7	5/7

are made to infusion-agar plates and incubated at room temperature for 24 hours. The growth is suspended in distilled water, and the organisms are extracted with acetone, then dried in a desiccator.

One gram of dried organisms is then added to 100 ml. of a 1 per cent solution of HCl (1 part 36 per cent HCl to 99 parts distilled water). Solution of available substances is allowed to take place for 1 day at room temperature, with shaking at frequent intervals. The mixture is then cleared by centrifuga-

tion at high speed (3,000 r.p.m.). Various extraction periods have been tried, from 1 hour to 10 days; however, apparently nothing is gained by extraction for more than 1 day (see Table 4). An even shorter period may prove to be adequate.

From this basic HCl extract, cleared by centrifugation, the material can be further purified by precipitation with alcohol or acetone, then dried, weighed, and resuspended in distilled water. However, resuspension is not easily accomplished and a completely satisfac-

TABLE 5  
*Stability of Immunogenic Component of Acid and Neutralized Solutions of Vi Extract*

Designation of Vi Extract	Period of Storage in Refrigerator	Amount of Preparations Administered per Mouse (ml.)	Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Amounts Indicated in 3rd Column of the Extracts Designated in 1st Column, in the Form Indicated Below (No. of Deaths/No. of Mice)	
			Below	
			Raw HCl Sol.	Neutralized Sol.
V-Ex-4	1 year	0.0005	6/6	0/6
		0.00005	6/6	0/6
		0.000005	6/6	4/6
V-Ex-5	1 year	0.0005	0/6	0/6
		0.00005	6/6	0/6
		0.000005	6/6	3/6
V-Ex-8	6 months	0.0005	1/6	0/6
		0.00005	5/6	0/6
		0.000005	6/6	6/6

tory dispersion has thus far not been obtained. We prefer to work with the cleared supernate of the raw HCl digest obtained as described above, after neutralization with NaOH. In this form, the Vi extract is a concentrated water-clear solution which does not precipitate out upon standing and is otherwise (chemically) quite stable. An interesting fact in regard to the relative stability of the raw HCl solution and the neutralized product was demonstrated in potency tests of these preparations after various periods of storage in the refrigerator. Contrary to expectations, the raw HCl solution was less stable in respect to both physical and immunogenic properties. It showed considerable precipitate and it had lost much of its immunizing potency, whereas the neutralized sample of the same substance was unchanged physically and retained its original immunogenicity. Comparative determinations for immunogenic potency of raw and neutralized samples of the same basic preparations of Vi extract have been recorded in Table 5. These indicate that early neutralization of a newly prepared product is advisable.

The neutralized solution of Vi antigen may be standardized biologically (determination of its TIU value)<sup>3</sup> or by determining the dry weight of organic substance present—which is represented by the difference in weight between the solids present in a measured amount of solution after desiccation in a jar at room temperature, and the residual weight after heating at 500° C. in a crucible. For our purposes, we have found that a determination of the TIU value of the substance is preferable; for, in so doing, we can add a certain number of TIU's to each unit volume of vaccine with assurance of the extent of effective increase in immunogenic potency.

This neutralized product, prepared as described above, was used in the follow-

ing reported experiments to determine the stability of its immunogenic properties.

#### METHOD OF TITRATING IMMUNOGENIC POTENCY

The method of titrating all substances reported in this paper is essentially that described in a previous publication.<sup>3</sup> Briefly, it consists of injecting intraperitoneally 0.5 ml. amounts of serial 1:10 dilutions of the substance (or of a dispersion of the dried material in distilled water) into respective groups of mice, followed 6 or 7 days later by a challenging dose of typhoid organisms suspended in 5 per cent mucin and intraperitoneally administered.

#### STABILITY OF VI EXTRACT

The first question which naturally arises is in regard to the stability of Vi extract in the presence of preservatives such as phenol, tricresol, and formaldehyde. One or another of these substances would likely be present in any bacterial vaccine, and its potential destructive effect would have to be reckoned with.

Another important point, closely linked with the effect of preservatives on Vi extract, is storage—storage of Vi extract as a dispersion in distilled water and as a component of typhoid vaccine, in a refrigerator and in the warmth of living conditions, to represent ideal and adverse situations, respectively.

Still another question arises, concerning the physical stability of Vi extract: If it were made a component of typhoid vaccine, would it remain in the suspending fluid as an independent substance, or would it become adsorbed to the bacterial cells? In either case, certain theoretical advantages would be gained while others would be lost. This question is chiefly of academic interest, but the answer should be available.

TABLE 6

*Stability of Vi Extract in Presence of Preservatives*

Results of Injecting 50,000 Typhoid Organisms into Mice Which 7 Days Previously Had Received the Materials and Amounts Indicated in Columns on Left, at the Intervals Subsequent to Preparation Set Forth Below (No. of Deaths/No. of Mice)						
Preservative Added to V-Ex-7	Amount of Materials Administered per Mouse (ml.)	Day of Preparation	2 Months	4 Months	7 Months	9 Months
Phenol (0.5%)	0.0005	0/8	0/8	0/8	0/8	0/8
	0.00005	0/8	1/8	0/8	1/8	1/8
	0.000005	3/8	6/8	5/8	7/8	6/8
Tricresol (0.25%)	0.0005	0/8	0/8	0/8	0/8	0/8
	0.00005	0/8	1/8	0/8	1/8	0/8
	0.000005	5/8	6/8	5/8	5/8	7/8
Formaldehyde (0.2%)	0.0005	0/8	0/8	0/8	0/8	0/8
	0.00005	0/8	0/8	1/8	0/8	1/8
	0.000005	4/8	6/8	4/8	5/8	5/8
None (Control)	0.0005	0/8			0/8	0/8
	0.00005	0/8	not tested		1/8	0/8
	0.000005	4/8			7/8	7/8

STABILITY IN THE PRESENCE OF PHENOL,  
TRICRESOL, AND FORMALDEHYDE

Preparations titrated in this experiment consisted of respective portions of V-Ex-7 to which had been added 0.5 per cent phenol, 0.25 per cent tricresol, and 0.2 per cent formalin. These materials were stored in the refrigerator, and titrated at various intervals for immunogenic potency. Details and

results of these titrations have been recorded in Table 6. The results indicate that there has been little if any significant change in the immunogenic potency of V-Ex-7 after 9 months of exposure, at about 5° C., to 0.5 per cent phenol, 0.25 per cent tricresol, or 0.2 per cent formalin. In fact, the preparations of Vi extract containing these preservatives maintained their potency

TABLE 7

*Effect of Extreme Heat (Autoclave) on Vi Extract*

Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Amounts Indicated in Column on Left of the Substances Designated Below (No. of Deaths/No. of Mice)		
Amount of Immunogenic Substance Administered per Mouse (ml.)	V-Ex-4 (Unheated Control)	V-Ex-4 (Autoclaved)
0.005	0/4	0/4
0.0005	0/4	0/4
0.00005	0/4	2/4
0.000005	0/4	3/4
0.0000005	3/4	4/4
0.00000005	4/4	4/4

TABLE 8

*Effect of Heat (100° C.) on Vi Extract*

Condition of Immunizing Substance (V-Ex-M)	Combined Results of 3 Comparative Tests Wherein 50,000 Typhoid Organisms Were Injected into Mice Which Had 7 Days Previously Received the Amounts (ml.) Indicated Below of the Substances Designated in Column on Left (No. of Deaths/No. of Mice)			
	0.005	0.0005	0.00005	Total Deaths
Raw HCl Sol. (Control)	0/18	0/18	11/18	11/54
Raw HCl Sol. (Heated)	0/18	2/18	10/18	12/54
Neut. HCl Sol. (Control)	0/18	1/18	10/18	11/54
Neut. HCl Sol. (Heated)	0/18	0/18	8/18	8/54
Neut. HCl Sol. Phenolized (Control)	0/18	2/18	8/18	10/54
Neut. HCl Sol. Phenolized (Heated)	0/18	1/18	10/18	11/54

quite as well as the control material—which itself showed little change during the period of observation.

#### STABILITY TO HEAT

##### 1. Extreme Heat

*Autoclave* (124° C.)—It is not anticipated that any biological product would be subjected to such mistreatment as autoclaving, but this information was sought merely as supplementary data on the properties of the Vi extract. The results of titrations of an autoclaved preparation have been recorded in Table 7. They indicate that considerable damage was done to the immunizing fraction of Vi extract. Any other result would have been contrary to our present concept of the chemical identity of immunogenic substances.

*Boiling Water Bath* (100° C.)—It is neither to be expected that biologicals will be exposed for any length of time to this temperature, but a breakdown of substances by heating to 100° C. for a short period would probably indicate deterioration over longer periods at a lower temperature. The Vi extract, represented in three forms, was immersed in a boiling water-bath for 30 minutes: (1) as the raw HCl solution, (2) as the neutralized solution, and (3) as the neutralized solution to which

0.5 per cent of phenol had been added. The results of titrations for immunogenic potency (recorded in Table 8) indicate that no significant changes were produced in any of these preparations by heating at 100° C. for 30 minutes.

##### 2. Moderate Heat

*Incubator* (at 37.5° C.)—It is very likely that vaccines, particularly en route to their destination, will be subjected to this temperature for greater or lesser periods of time. The test to determine the effect of such exposure employed the Vi extract as a component of TAB vaccine (TABVi), approximately 2,000 TIU having been added per ml. of TAB. The results of titrations for immunogenic potency have been recorded in Table 9. They indicate that, at this temperature, deterioration of the antityphoid component of TAB vaccine is more evident than in the case of TABVi, the explanation probably being that Vi extract is less affected and that an excess of it in the dilutions of TABVi used compensates for the destruction of the antityphoid factor of the typhoid organisms.

*Room Temperature* (22° C.–26° C.)—It is expected that vaccines will be exposed for some time to ordinary room temperature, en route to their destina-

TABLE 9

*Stability of Vi Extract in TAB Vaccine (TABVi) at 37.5° C.*

Immunizing Substance	Period of Exposure at 37.5° C.	Results of Injecting 50,000 Typhoid Organisms into Mice, Which Had 7 Days Previously Received the Amounts (ml.) Indicated Below of the Substances Designated on the Left (No. of Deaths/No. of Mice)			
		0.05	0.005	0.0005	0.00005
TABVi	0 (Fresh)	0/8	0/8	2/8	6/8
	1 week	0/8	0/8	1/8	6/8
	2 weeks	0/8	0/8	1/8	8/8
TAB	0 (Fresh)	0/8	0/8	6/8	8/8
	1 week	0/8	2/8	6/8	8/8
	2 weeks	0/8	5/8	8/8	8/8

tion and while being used. Except through gross negligence, however, the total period of such exposure for any particular bottle of vaccine should not exceed 1 month. The relative keeping properties of TAB vaccine and phenolized Vi extract were determined, the conditions of storage (on shelf in office during June-July) being identical, while the materials were titrated simultaneously. The results of these titrations have been recorded in Table 10. They demonstrate that, stored at room temperature, the Vi extract is at least as stable as TAB vaccine.

#### STABILITY OF VI EXTRACT IN TAB VACCINE

*Physical Stability*—The physical stability of Vi extract in TAB vaccine—that is, its dependence upon the bacterial cells (adsorption) or its independence from cells (acting as a true solution) was briefly studied as a matter of interest.

The supernates of TAB vaccine, and of TAB to which Vi extract had been added 2 months previously (TABVi) were titrated, with adequate controls, for immunogenic potency. Details and results of these titrations have been

TABLE 10

*Relative Stability of Vi Extract and TAB Vaccine at Room Temperature*

Designation of Immunizing Substance	Amount of Material Administered per Mouse (ml.)	Results of Injecting 50,000 Typhoid Organisms into Mice Which had 7 Days Previously Received the Amounts Indicated in 2nd Column of the Substances Designated in 1st Column, After the Various Periods of Storage at Room Temperature Indicated Below (No. of Deaths/No. of Mice)		
		0 (Fresh)	2 Weeks	4 Weeks
V-Ex-M-2	0.005	0/7	0/8	1/8
	0.0005	1/7	0/8	0/8
	0.00005	6/7	7/8	7/8
TAB	0.05	0/7	0/8	0/8
	0.005	0/7	0/8	2/8
	0.0005	3/7	6/8	6/8

TABLE 11

*Physical Stability of Vi Extract in TAB Vaccine (TABVi)*

Basic Immunogenic Material	Fraction Used	Results of Injecting 50,000 Typhoid Organisms into Mice Which Had 7 Days Previously Received the Materials Indicated on the Left in the Amounts ' (ml.) Set Forth Below (No. of Deaths/No. of Mice)			
		0.05	0.005	0.0005	Totals
TAB	Supernate	0/6	1/6	6/6	7/18
	Resuspended	0/6	5/6	6/6	11/18
	Whole	0/6	2/6	4/6	6/18
TABVi	Supernate	0/6	0/6	0/6	0/18
	Resuspended	0/6	1/6	5/6	6/18
	Whole	0/6	0/6	1/6	1/18

recorded in Table 11. From these results, it appears that Vi extract, mixed with TAB vaccine, maintains essentially an independent existence in the suspending fluid. Some adsorption to bacterial cells does seem to take place, but to a very slight extent and at a very slow rate.

*Immunogenic Stability*—This topic was discussed above under the heading of "Stability to Heat—Moderate Heat—Incubator at 37.5° C.," with results entered in Table 9.

#### TOXICITY OF VI EXTRACT

As would be expected, Vi extract is a toxic substance. The critical question is: To what extent would the addition of an effective concentration of Vi extract to TAB vaccine increase the frequency and severity of clinical reactions?

In testing this substance for toxicity in laboratory animals, it was found that although 16 to 18 gm. mice tolerated an intraperitoneal injection of 0.5 ml. (approximately 10,000 TIU), 3 kg. rabbits were invariably killed by this dose when intravenously administered. With such a wide divergence in species susceptibility, there was no way of predicting the toxicity of Vi extract for man except to employ man as the experimental animal.

Accordingly, the author was injected with trial amounts to explore their effect in a somewhat sensitized individual. From the slight local reactions which resulted, and the absence of any systemic manifestation, it was estimated that 200 TIU would be comfortably tolerated by less sensitized persons. Eleven volunteers were thereupon injected intradermally with 200 TIU contained in 0.1 ml. of the preparation. This amount is the immunogenic equivalent of 1.0 ml. of monovalent typhoid vaccine.

In all cases, there was some degree of erythema surrounding the site of injection, with slight to moderate tenderness in the central area, at the end of the first 24 hour period. The hyperemic areas ranged in diameter from 2.5 cm. to 5.0 cm.—averaging less than 10 sq. cm.<sup>2</sup> The intensity and extensiveness of these reactions were appreciably less than those generally produced by 0.1 ml. of typhoid or TAB vaccine. In all instances, objective and subjective symptoms rapidly subsided during the second 24 hour period. Neither lymphadenitis nor systemic reactions of any description were experienced by the participants.

#### DISCUSSION AND RECOMMENDATIONS

Vi extract, prepared as described in

this paper, lends itself well to use as an auxiliary immunizing substance for typhoid or TAB vaccine. It is easily prepared and standardized; it is chemically and physically stable in the presence of commonly used preservatives, and it is appreciably less toxic than an immunogenically equivalent amount of typhoid vaccine. Added in small amounts to TAB vaccine, Vi extract increases significantly the antityphoid potency over that possessed by the vaccine alone, as measured by active immunization tests in mice.

It is realized that active mouse protection bears a problematical relationship to the protection of man against infection, and that these experiments must ultimately be confirmed in man. In our experience, however, those agents which were the more potent as measured by active immunization tests in mice proved to be the more active in man as measured by serum protection tests. This still falls short of field tests, but it is the best method of laboratory evaluation available.

Despite the feasibility of fortifying TAB vaccine with Vi extract and the consequent gain in antityphoid immunogenicity, the addition of this extract to TAB vaccine of the present bacterial content and mandatory dosage is not recommended. Because of the occasional incapacitating reaction and the more frequent annoying reactions resulting from administration of the prescribed dosage of the currently prepared TAB vaccine, it is believed that any manipulation of the vaccine should be toward a product (or dosage) equally effective immunologically but less provocative of clinical reactions. The addition of Vi extract to the presently prepared TAB vaccine, without any modification of dosage, could, conceivably, aggravate an already undesirable feature of typhoid-paratyphoid vaccination.

Among the alternative procedures.

there are two that warrant investigation: One is to reduce the "T" component of TAB vaccine and add Vi extract in a compensatory measure; the other is to add Vi extract to the present TAB product, and reduce the dosage. Since an investigation of the effect and effectiveness of a reduced dosage of TAB vaccine (three 0.5 ml. doses) is already in progress here, it has been decided to await the findings of this investigation before taking any steps toward fortifying TAB vaccine with the Vi extract.

Another project involving the use of Vi extract to be opened in the near future is its use in combination with immunogenic fractions of the typhoid bacillus—such as Wakeman's polysaccharide<sup>4</sup> or Morgan's "purified antigen,"<sup>5</sup> for the purpose of augmenting these products with the important Vi fraction which is destroyed or diminished in their preparation.

#### SUMMARY

The extraction of Vi antigen from *S. coli* 5396/38 organisms with 1 per cent HCl is described.

The Vi extract was found to be immunogenically more potent than conventionally prepared antigenic fractions of the typhoid bacillus when titrated by active immunization tests in mice.

The Vi extract was found to be stable in the presence of preservatives commonly used for biologicals (phenol, tricresol, and formaldehyde) and under conditions of handling and storage usually applied to biologicals.

In a few experimental subjects, an amount of Vi extract immunogenically equivalent to 1 ml. of typhoid vaccine (200 TIU) administered intradermally, was found to produce a mild local reaction with no accompanying systemic manifestations.

The addition of Vi extract to TAB vaccine under present conditions of bacterial content and prescribed dosage is

not recommended because of the potential increase in frequency and severity of clinical reactions following the use of such a combination. A study of the effect and effectiveness of reduced dosage of TAB vaccine is now in progress, and a decision of how Vi extract will be used is pending the outcome of this study.

It is also planned to combine Vi extract with conventionally prepared immunogenic fractions of the typhoid bacillus, and to compare this combination with a bacterial vaccine in respect

to immunological responses and clinical reactions.

#### REFERENCES

1. Kauffman, F. *Die Bakteriologie der Salmonella-Gruppe*. Einar Munksgaard, Copenhagen, 1941, pp. 291-294.
2. Luippold, G. F. Antityphoid Activity of Vi Antigen from Extra-Generic Sources. *Science*, 99:497-498 (June 16), 1944.
3. Luippold, G. F. A Proposed Typhoid Immunogenic Unit for Evaluation of Antityphoid Immunizing Substances. *A.J.P.H.*, 35:153-158 (Feb.), 1945.
4. Wakeman, F. B. A Specific Somatic Polysaccharide as the Essential Immunizing Antigen of the Typhoid Bacillus. *Mil. Surgeon*, 84:318-338, 452-471 (April and May), 1939.
5. Morgan, H. R. Immunological Properties of an Antigenic Material Isolated from *Eberthella Typhosa*. *J. Immunol.*, 41:161-179 (June), 1941.

## Proposed Diabetic Survey

A coöperative project is being conducted in Philadelphia to x-ray the chests of persons in the city having diabetes. The cost of the survey will be borne by the Philadelphia Tuberculosis and Health Association. The appointment of necessary committees is under the guidance of the Philadelphia County medical committees on diabetes and tuberculosis, together with the X-Ray Survey Committee of the Philadelphia Tuberculosis and Health Association.

At the meeting September 24 at the Philadelphia County Medical Society, physicians interested in diabetes and tuberculosis discussed the various aspects of the survey, bringing out that it would be invaluable in shedding light on

certain concepts long held regarding the response of diabetic patients to tuberculosis. It was further brought out that a mass survey might confirm or refute the concepts that hilar and basal sites are more frequently involved in tuberculous diabetic patients. The recording of simple data relevant to nutritional status might illumine the question as to whether or not nutritional status is one of the major factors in the increased susceptibility of diabetic patients to tuberculosis. It is proposed to divide the city into districts, installing a mobile x-ray unit in suitably located central hospitals for the x-ray examination of the diabetic patients in the vicinity and of non-diabetic outpatient controls.



# Age and Sex Variations in the Prevalence and Onset of Diabetes Mellitus

MORTIMER SPIEGELMAN AND HERBERT H. MARKS

*Statistical Bureau, Metropolitan Life Insurance Company, New York, N. Y.*

IN this paper, there are presented estimates of the sex and age distribution of the existing diabetic population in the United States, of the new diabetics expected each year, and of those in the population who may eventually become diabetic.

## PREVALENCE

In preparing the estimates which form the basis for this paper, use was made of the findings of the National Health Survey in regard to diabetes prevalence. This survey was conducted

United States. Morbid conditions were recorded by trained enumerators as they were reported by a member of the household. Wherever possible, an effort was made to confirm the diagnoses by referring to the physician in attendance. Through the courtesy of George St. J. Perrott, Chief, Division of Public Health Methods, National Institute of Health, there have been made available unpublished data regarding diabetes prevalence which form the basis for this paper.<sup>2</sup> These data are shown in Table 1.

TABLE 1

*Cases of Diabetes Mellitus per 1,000 Persons of Specified Sex and Age, National Health Survey, 1935-1936*

Age	Males			Females		
	Population Covered	Cases of Diabetes	Cases per 1,000 Persons	Population Covered	Cases of Diabetes	Cases per 1,000 Persons
All ages	1,201,992	3,285	2.73	1,300,399	5,897	4.53
Under 15	303,207	105	0.35	299,607	124	0.41
15-24	206,696	129	0.62	239,673	136	0.57
25-34	196,845	178	0.90	228,456	247	1.08
35-44	191,157	385	2.01	204,368	646	3.16
45-54	151,540	680	4.49	151,468	1,309	8.64
55-64	87,647	873	9.96	95,107	1,731	18.20
65-74	46,380	702	15.14	55,787	1,328	23.80
75-84	15,067	212	14.07	19,790	341	17.23
85 and over	2,189	14	6.40	3,196	22	6.88
Unknown	1,264	7	5.54	2,947	13	4.41

during the winter of 1935-1936 under the auspices of the U. S. Public Health Service.<sup>1</sup> It covered 2,500,000 white and colored persons living in 700,000 households in 83 cities and was so planned as to constitute a sample representative of the general urban population of the

*Quality of the data:* It is possible to obtain some light on the quality of the data by comparing them with another experience, namely, the Massachusetts

NOTE: The writers are indebted to Drs. Louis I. Dublin and Alfred J. Lotka for encouragement and advice in the conduct of this study.

survey made by Bigelow and Lombard during 1929-1931.<sup>3,4</sup> Inspection of Table 2 shows that, on the whole, the incidence of diabetes observed in the National Heath Survey was somewhat greater than that in the Massachusetts survey.\* The largest deviation between the two experiences is found among males of ages 70 to 79, and here it would seem that the Massachusetts figure is too low, a situation which may arise from the chance fluctuation of the small sample involved. Although the prevalence of diabetes may have increased from 1929-1931 to 1935-1936, the higher rates of the later period may also suggest better reporting in the National Health Survey than in the Massachusetts survey. In any event, the differences between the two experiences, on the whole, are not very great. They essentially confirm each other.

of this type, would be an understatement."

For the basic computations on the onset of diabetes according to sex and age, the data in Table 1 were used without adjustment. It is evident, therefore, that these data will provide minimum estimates of the situations considered. This is an important qualification of these estimates because in an appreciable number of cases diabetes exists in a form so mild that it may go undiagnosed or its diagnosis may be considerably delayed. As Joslin<sup>5</sup> has pointed out, "Diabetics developing the disease after the age of 60 exhibit it generally in mild form; the exact time of onset of diabetes in older patients is not as easily ascertainable as in younger diabetics because the condition develops more insidiously."

Fortunately, trial computations of

TABLE 2

*Cases of Diabetes Mellitus per 1,000 Persons of Specified Sex and Age, National Health Survey, 1935-1936, and Massachusetts Survey, 1929-1931*

Age	Males		Females	
	National Health Survey	Massachusetts Survey	National Health Survey	Massachusetts Survey
	1935-1936	1929-1931	1935-1936	1929-1931
40-49	3.1	4.2	5.5	5.0
50-59	6.8	6.6	13.1	15.1
60-69	12.8	10.3	21.8	17.2
70-79	15.8	10.4	22.7	19.0
80 and over	11.2	10.0	11.4	14.0

Commenting on the quality of the data from the National Health Survey, Mr. Perrott<sup>2</sup> said, "I am inclined to believe that if the informant knew a person had diabetes, she would usually report that fact, even though the person were able to work. On the other hand, some such cases were naturally missed. Also, there would be cases unknown to the informant. . . . It seems evident that any estimate of the amount of diabetes present, based on information

these data show that any assumed percentage of understatement, even as high as 25 per cent, in the observed prevalence rates, provided it is invariant with sex and age, affects the onset rates emerging from our computations by practically the same percentage. It follows then that the rate of prevalence and annual onset and the chances of eventually becoming diabetic, as presented in the following pages, may be increased by any flat percentage considered appropriate to allow for any understatement in the observed data. No detailed consideration was given, however, to percentage allowances which

\* For the purpose of this comparison, it was necessary to adjust the data of the National Health Survey by interpolation to the age grouping in which the data of the Massachusetts survey were presented.

TABLE 3

*Diabetes Prevalence Rates, Diabetes Onset Rates (Rate at Which New Cases Arise among Non-Diabetics per Annum), and Chances of Eventually Becoming Diabetic, According to Sex and Age, United States, 1935-1936*

Age	Diabetes Prevalence Cases per 1,000 Population National Health Survey		Diabetes Onset—New Cases per Annum per 100,000 Non-Diabetic Population		Chances per 1,000 of Eventually Becoming Diabetic	
	Males	Females	Males	Females	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under 15	0.4	0.4	*	*	22.1	41.5
15-19	0.6	0.6	*	*	22.4	42.0
20-24	0.7	0.7	2.8	3.8	22.6	42.3
25-29	0.7	0.8	5.8	10.0	22.8	42.6
30-34	1.1	1.4	11.0	19.6	22.8	42.6
35-39	1.6	2.4	16.4	31.9	22.7	42.2
40-44	2.4	4.0	24.6	53.7	22.4	41.3
45-49	3.8	7.1	39.6	82.2	21.9	39.4
50-54	5.3	10.5	71.6	130.6	20.7	36.2
55-59	8.6	16.1	101.7	179.5	18.1	30.7
60-64	11.8	20.9	114.8	198.1	14.8	23.8
65-69	14.1	23.0	125.1	201.2	11.3	16.6
70-74	16.6	24.9	113.3	162.4	7.7	10.0
75-79	14.5	19.1	99.0	115.0	4.6	5.2
80-84	13.2	13.5	65.9	66.5	2.0	2.0
85-89	6.4	7.1	20.1	19.7	0.4	0.4

\* Onset rates were not computed at these ages in view of the small numbers involved in the basic data.

would vary with sex and age, because the results obtained from such allowances would not have a simple arithmetic relationship to those derived from the basic data.

*Age and sex characteristics of diabetes prevalence rates:* According to the National Health Survey, there were at least 3.67 diabetics per 1,000 persons in our urban communities in 1935-1936. Among males, 2.73 out of every 1,000 were diabetic, while among females the rate was appreciably greater, namely, 4.53 per 1,000. The rates for each sex rise steadily with increase in age, from low points, at ages under 15, of 0.35 per 1,000 males and 0.41 per 1,000 females to maxima in the age group 65 to 74 years, the rates here being 15.14 per 1,000 males and 23.80 per 1,000 females. At ages 85 and over, the rates for both sexes are somewhat over 6 per 1,000. The data supplied have been interpolated to provide diabetes prevalence rates for quinquennial age groups, as shown in Table 3, columns 2 and 3.

Along with the changes just described, there are correspondingly rapid

changes in the sex ratio of diabetes incidence with increase in age. Thus; under age 25, the rates for the two sexes are not much different; at ages 25 to 34 years, the females are higher by 20 per cent, at ages 35 to 44 by almost 60 per cent, and at ages from 45 to 64, their rates are almost double those for males. After age 65, the differential between the two sexes diminishes, the females being higher by almost 60 per cent at ages 65 to 74, by about 20 per cent at ages 75 to 84, and practically the same as that for males at ages 85 and over.

*Age and sex distribution of diabetics:* If it is assumed that the diabetes prevalence rates according to sex and age, as observed in the National Health Survey, prevailed in the general population of the United States during 1940, then there were at least 500,000 diabetics in the country during that year and their sex and age distribution was as shown in Table 4, columns 2 and 3. Males then constituted 38.5 per cent of the total cases and females 61.5 per cent. Over one-quarter of the total was under age 50, one-quarter was be-

TABLE 4

*Estimated Number of Existing Diabetics, New Diabetics, and Potential Diabetics in the 1940 Population of the United States, by Sex and Age \**

Age	Existing Diabetics		New Diabetics During 1940		Potential Diabetics	
	Males	Females	Males	Females	Males	Females
(1)	(2)	(3)	(4)	(5)	(6)	(7)
All Ages	196,400	313,000	18,800	31,100	1,376,000	2,497,000
Under 15	6,600	6,600	800†	800†	370,000	675,000
15-19	3,700	3,700	200†	200†	139,000	259,000
20-24	3,900	4,200	200	200	129,000	249,000
25-29	4,000	4,500	300	600	124,000	240,000
30-34	5,500	7,100	600	1,000	115,000	220,000
35-39	7,800	11,500	800	1,500	107,000	202,000
40-44	10,700	17,400	1,100	2,400	99,000	180,000
45-49	15,900	28,800	1,700	3,300	92,000	158,000
50-54	20,000	36,700	2,700	4,500	77,000	125,000
55-59	26,000	45,700	3,000	5,000	54,000	86,000
60-64	28,200	48,600	2,700	4,500	35,000	54,000
65-69	26,800	44,000	2,400	3,800	21,000	31,000
70-74	21,100	32,300	1,400	2,100	10,000	13,000
75-79	10,500	14,900	700	900	3,000	4,000
80-84	4,700	5,600	200	300	1,000	1,000
85+	1,000	1,400	...	...	...	...

\* Based upon the rates shown in Table 3 and the United States census of population, April 1, 1940.

† Assumption based upon estimate of existing diabetics.

tween 50 and 60, and a little under half was at ages 60 and over. The peak, for quinquennial age groups, is found at ages 60 to 64 years, the males in this age group constituting 5.5 per cent of the total diabetic population and females 9.5 per cent. The average age of male diabetics was 55.6 years, and of the females, 56.7 years.

The foregoing estimate of a minimum of 500,000 diabetics in 1940 may be compared with several other estimates. In a review of diabetes incidence in the United States in 1930, Joslin, Dublin, and Marks<sup>3</sup> estimated the number of diabetics as 400,000 at the most. For this estimate, they made use of the diabetes prevalence rates, specific for sex and age, as observed in the Massachusetts survey. More recently, the U. S. Public Health Service issued an estimate of 660,000 diabetics in the United States in 1937, basing its figure upon the findings of the National Health Survey, with an adjustment for under-enumeration.<sup>6</sup> Their method involved multiplication of the crude overall diabetes prevalence rate observed in the Survey, by the total United States population

for 1937. To adjust for under-enumeration, the result was then "multiplied by the ratio of the 1935 death rate [from diabetes] in the United States (Bureau of the Census) to the Health Survey death rate." Both of these steps may introduce a bias toward too high an estimate. In the first place, the crude overall diabetes prevalence rate of the Survey is influenced in an upward direction by the fact that the Survey population contains an appreciable excess of females who, by themselves, have a higher prevalence rate than males. The crude prevalence rate based upon the National Health Survey, therefore, is hardly applicable without downward adjustment to the total population of the United States in 1937, in which males exceeded females in number. Second, the use of the ratio of the 1935 diabetes death rate in the whole country to that found in the Survey may lead to an over-correction. Since the deaths reported in the Survey were obtained by questionnaire, it is possible that deaths from diabetes were understated to a greater extent than cases. The cases reported were alive

on the day of the census, whereas the deaths may have occurred at any time within the preceding year, with a consequent increase in liability to error in reporting. The Public Health Service estimate for the number of diabetics in the country as a whole may be too high for another reason: namely, that the National Health Survey, of which they made use, represents the situation in an urban population, whereas indications are that the prevalence of diabetes, age for age, is lower in rural than in urban areas.<sup>3, 7</sup>

An estimate prepared by one of us (M. S.) for Joslin in 1939 yielded a figure of 1,000,000 diabetics for 1950. This was based upon an assumption of an average duration of 20 years from onset of diabetes to death; the assumption now appears to have been rather optimistic for the general population.<sup>8</sup>

#### GROWTH OF THE DIABETIC POPULATION

The outlook for the next few decades is that the number of diabetics will increase at a much greater rate than the population, and that the problem of diabetes will gain in importance. If it is assumed that the course of the diabetes prevalence rates according to sex and age as observed in the National Health Survey remain unchanged, then it is expected that the number of diabetics will increase by 18 per cent in the decade from 1940 to 1950, while the total population may grow only by 9 per cent. Present indications are that our total population will be at a maximum about 1985, when it will be 22 per cent greater than it was in 1940\*; however, over the same time, the diabetic population may increase by 74 per cent. The more rapid increase of

the diabetic population than of the total population arises from two factors: first, the ever-increasing proportion of persons at the older ages; second, the more rapid increase in the number of females than of males at these ages.

In accepting the assumption that the course of the diabetes prevalence rates, according to sex and age, as observed in the National Health Survey, will continue to prevail without change, it is realized that no allowance is being made for the effect that organized efforts to make the general practitioner and the lay public more diabetes conscious may have upon future prevalence rates. It is quite likely that as these efforts become more successful, there will be an increase in diabetes case finding. Another factor that may raise the prevalence rates is the likelihood of further increases in the after-lifetime of diabetics beyond those already observed. It is obvious that by lengthening the life of diabetics, the proportion of them in our midst will increase. Still another consideration arises from the trend of our standard of living. As it continues to higher levels and is accompanied by a further increase in food consumption beyond the lessened physical requirements which result from our growing mechanization, the prevalence of diabetes may also show an upward trend. Although research is under way at present on the prevention of diabetes, the outlook for practical results appears too remote to warrant, at this time, the assumption of a favorable effect on future diabetes prevalence.

#### NEW DIABETICS

The data of the National Health Survey, together with information regarding mortality among diabetic patients of the George F. Baker Clinic during 1926 to 1929 reported by Joslin, Dublin, and Marks,<sup>9</sup> provide the material with which it is possible, by a suitable actuarial technique, to esti-

\* These estimates are based upon the "medium" forecast of population published by Thompson and Whelpton in *Estimates of the Future Population of the United States, 1940-2000*, National Resources Planning Board, Washington, D. C., 1943, Table 7, p. 65.

mate the age and sex distribution of persons becoming diabetic during the course of a year.\* Although the mortality experience among the patients of the George F. Baker Clinic relates to a period somewhat earlier than the Survey, it is believed suitable for the present computations. The fact that the mortality experience of the Baker Clinic antedates somewhat the period of the National Health Survey is an actual advantage, as there would naturally be a lag between the results obtained in a large metropolitan medical center and the corresponding situation in the country as a whole, where treatment is sometimes inadequate or carried out under adverse conditions. Furthermore, the years 1926 to 1929 are at a sufficiently late date to insure that there was at that time already familiarity with the management of diabetes on insulin therapy, and the drug was in wide use.

*Age and sex characteristics of diabetes onset rates:* The first result emerging from the computations was a series of diabetes onset rates specific for sex and age—that is, a table of figures showing, for each sex and age, the chances that a non-diabetic will acquire the disease within one year. The results are shown for quinquennial age groups in Table 3, columns 4 and 5. As indicated earlier, the results represent the situation at a minimum. Correction for understatement in the Survey would give proportionally higher figures at each age.

An increase in diabetes onset with advance in age is apparent quite early in life; among young adults of ages 20 to 24 years, new cases arise annually at the rate of 2.8 per 100,000 for males and 3.8 per 100,000 for females. The onset rates mount with an accelerating rapidity up to about age 55—more so for women than for men. Thus, in the

age group 55 to 59 years, males acquire the disease at a rate of 102 per 100,000 or about 35 times the rate at ages 20 to 24, while females of ages 55 to 59 have a diabetes onset rate of 180 per 100,000, or about 45 times that of ages 20 to 24. After age 55, the diabetes onset rates increase at a less rapid pace and reach a peak rate of 125 per 100,000 males at ages 65 to 69 years, and a rate of 201 per 100,000 females of the same ages. The decrease in diabetes onset rates thereafter is quite rapid; for example, at ages 80 to 84, the annual onset rates for both males and females were about 66 per 100,000 persons. In this connection, attention is again called to the uncertainty of the time of onset of diabetes at the older ages.

The relative susceptibility of males and females to diabetes may be measured by the ratio of the onset rate for females to that for males of the same age. Thus, the ratio of the onset rates for females to males increases to a maximum of 2.2 at ages 40 to 44 years, and thereafter decreases, so that a ratio of 1.6 is found at ages 65 to 69 years, while after age 75 the rates of onset in the two sexes are not very different. The great acceleration in diabetes onset among females on approach of the menopause is indicative of the endocrine changes that are characteristic of that period of life.

*Age and sex distribution of new diabetics:* On the basis of the foregoing diabetes onset rates specific for sex and age, it is estimated that at least 50,000 persons in the United States became diabetics during 1940; about three-eighths were males and a little under five-eighths were females. The distribution of the new diabetics during 1940 according to sex and age is shown in Table 4, columns 4 and 5. Somewhat more than one-quarter of the new diabetics acquired the disease at ages under 50 years; almost one-half fell into the

\* A brief outline of the method employed is given in a note at the end of this paper.

relatively narrow range from 50 to 64 years; and the remaining quarter were at ages 65 and over when they became diabetic. The average age of the new diabetics in 1940 was somewhat over 54 years for both sexes.

If we assume that the course of the diabetes onset rates according to sex and age as found in this paper remains unchanged in the future, then the new diabetics in 1950 will be 18 per cent greater than in 1940, and those in 1985 will be greater by 67 per cent. These increases are much greater than those of the total population. As in the case of the estimates of the total number of diabetics, the increases in the annual number of new cases arise from the growth of total population, from the increasing proportion of older persons, and from the increasing proportion of females in the population.

#### EVENTUAL DIABETICS IN THE POPULATION

*Chances of eventually becoming diabetic:* With the annual diabetes onset rates specific for sex and age computed in the manner described, and with an appropriate life table, it is a relatively simple matter to compute the chances that a man or a woman of any age will eventually become diabetic. The life table used for this purpose was based upon the mortality experience of white persons in the general population of the United States during 1935, this year being sufficiently close to the period of the National Health Survey. The results of the computation are shown in Table 3, columns 6 and 7.

Two characteristics become apparent from an examination of these data. In the first place, up to age 50, the chances of eventually becoming diabetic for females are almost twice those for males. Second, the chances rise very slowly from birth to a maximum at age 30, fall gradually until about age 50, and then fall quite rapidly at the higher

ages. Thus, among females, the chances of eventually becoming diabetic increase to a peak rate of 42.6 per 1,000 at age 30, then fall to 23.8 per 1,000 at ages 60 to 64, and to 10.0 per 1,000 at ages 70 to 74. In the case of males, the peak in the probability of eventually becoming diabetic is 22.8 per 1,000 at age 30, while in the age group 60 to 64 years, the figure is 14.8 per 1,000. In short, of our population under age 50, over 4 per cent of the females and more than 2 per cent of the males will become diabetic sometime during the course of their lives. These chances of eventually becoming diabetic are greater than the chances of eventual death from the disease since many diabetics die from other causes.

*Age and sex distribution of the potentially diabetic population:* An estimate of the age and sex distribution of eventual diabetics in the population at the census of 1940 is easily obtained. It simply calls for the multiplication of the numbers of the population (less those already diabetic), subdivided by sex and age, by the corresponding chances of eventually becoming diabetic. On this basis, it is found that at least 3,873,000 of those in the population of 1940 may eventually become diabetic; their age and sex distribution is shown in Table 4, columns 6 and 7. Of the total, 35.5 per cent are males and 64.5 per cent are females. About one-quarter of the number in the 1940 population who may eventually become diabetic will be found at ages under 15, and almost half are between the ages of 15 and 40.

#### SUMMARY

1. Using the diabetes prevalence rates according to sex and age as observed in the National Health Survey, it is estimated that there were at least 500,000 diabetics in the United States in 1940. Almost two-fifths of the diabetics were males and over three-fifths were

females. One-half of the total diabetics were at ages 60 and over.

2. During the next few decades, the number of diabetics in the United States will increase at a much greater rate than the total population. From 1940 to 1950, an increase of 18 per cent may be expected in the number of diabetics, while the total population is expected to grow only by 9 per cent.

3. At least 50,000 persons in the United States became diabetic during 1940; about two-fifths were males and three-fifths females. Not quite half were under 55 at the onset of their diabetes; somewhat more than one-quarter became diabetic between ages 55 and 64; and one-quarter were at ages 65 and over when they developed the disease.

4. Of our population under age 50, over 4 per cent of the females and more than 2 per cent of the males will eventually become diabetic.

#### NOTE ON METHOD

This note outlines the procedure followed in arriving at the diabetes onset rates.

In a stationary (life table) population let

$l_x$  = number who live to attain age  $x$

$r_x$  = proportion of persons at age  $x$  with diabetes

$l_x^a = r_x \cdot l_x$  = number of diabetics attaining age  $x$

$i_x$  = number becoming diabetic during the year of age  $x$  to  $x+1$

$q_x^a$  = chance, per head, that a diabetic just attaining age  $x$  will die from any cause within the year of age

$d_x^a$  = number of deaths from any cause at age  $x$  to  $x+1$  among diabetics in the stationary population

Then

$$(1) l_x^a + i_x - d_x^a = l_{x+1}^a$$

Assuming that the new diabetics at age  $x$  to  $x+1$  were exposed to the risk of death as diabetics at that age for one half year on the average, and further, that their mortality was not different from that of those already diabetic, we have

$$(2) d_x^a = q_x^a (l_x^a + \frac{1}{2} i_x)$$

Substituting (2) in (1) and solving

$$i_x = \frac{l_{x+1}^a - l_x^a (1 - q_x^a)}{1 - \frac{1}{2} q_x^a}$$

The chance that a non-diabetic of age  $x$  will become diabetic within the course of the year of age is

$$p_x^a = \frac{i_x}{l_x - l_x^a}$$

The chance of eventually becoming diabetic at or after age  $x$  is

$$\frac{\sum_{t=0}^{t=\infty} i_{x+t}}{l_x - l_x^a}$$

The life tables used were those for white males and white females in the general population of the United States in 1935.

#### REFERENCES

1. Perrott, G. St. J., Tibbitts, C., and Britten, R. H. The National Health Survey—Scope and Method. *Pub. Health Rep.*, 54:1663, 1939.
2. Personal communication.
3. Joslin, E. P., Dublin, L. I., and Marks, H. H. Studies in Diabetes Mellitus; II. Its Incidence and the Factors Underlying Its Variations. *Am. J. M. Sc.*, 187:433, 1934.
4. Bigelow, G. H., and Lombard, H. L. *Cancer and Other Chronic Diseases in Massachusetts*. Boston: Houghton Mifflin, 1933.
5. Joslin, E. P., Root, H. F., White, P., and Marble, A. *Treatment of Diabetes Mellitus*. Philadelphia: Lea & Febiger, 1940, p. 32.
6. U. S. Public Health Service. The Magnitude of the Chronic Disease Problem in the United States. National Health Survey, 1935-1936. *Sickness and Medical Care Series, Bulletin No. 6*, 1938.
7. Joslin, E. P., Dublin, L. I., and Marks, H. H. Studies in Diabetes Mellitus; III. Interpretation of the Variations in Diabetes Incidence. *Am. J. M. Sc.*, 189:163, 1935.
8. Joslin, E. P., Root, H. F., White, P., and Marble A. *Loc. cit.*, p. 23.
9. Joslin, E. P., Dublin, L. I., and Marks, H. H. Studies in Diabetes Mellitus; VI. Mortality and Longevity of Diabetics. *Am. J. M. Sc.*, 195:596, 1938.



# Outbreak of Typhoid Fever with Orange Juice as the Vehicle, Illustrating the Value of Immunization

T. G. DUNCAN, M.D., J. A. DOULL, M.D., DR.P.H., F.A.P.H.A.,  
E. R. MILLER, AND HULDAH BANCROFT, PH.D.

*Chief, Subdivision of Communicable Disease, Division of Health, Cleveland, Ohio;  
Professor of Preventive Medicine and Public Health, School of Medicine,  
Western Reserve University, Cleveland, Ohio; Bacteriologist, Division  
of Health, Cleveland, Ohio; and Assistant Professor of Biometrics,  
School of Medicine, Western Reserve University, Cleveland, Ohio*

A SMALL localized epidemic of typhoid fever occurred in the E home, a residential hotel for business women, in Cleveland, Ohio, during January, 1944. Approximately 360 young women including 150 SPARS lived in the Home, among whom 18 cases of typhoid fever developed with 1 death. The outbreak is interesting because of the unusual vehicle of the infection and because it affords an opportunity to observe the influence of vaccination against *Eberthella typhosa*.

The first hint of the epidemic came on January 16, 1944, when a private physician notified the Division of Health that he was treating two young women suffering from fever of unknown origin. The first of these had been hospitalized on January 5, the second on January 14. Both were residents of the E Home. On January 16, a third resident was hospitalized with similar symptoms. On January 17, blood serum from the first patient agglutinated *E. typhosa* in a relatively high titer ( $H$  1:640,  $O$  1:2560).

Epidemiological investigation was begun on January 18. Stool cultures and blood specimens were obtained immediately from all individuals who had had any contact with food handling

since November 1, 1943, including those who had left the service of the hotel. A plumbing survey was instituted and water samples from outlets on every floor were examined. Serving of food within the hotel was discontinued on January 19. All guests and employees were checked daily for suspicious symptoms.

Letters were sent to all former guests who had resided at the Home during December and January with the request that the Division of Health be notified of any illness occurring within 30 days of departure from the Home. Replies were received from 23 of 49 letters sent. Information obtained revealed that 3 cases had occurred in this group, 1 of which had terminated fatally.

The dates of onset of the 18 reported cases were as follows:

Onset	Cases	Onset	Cases
December 31, 1943	1	January 13, 1944	1
January 5, 1944	1	15, "	1
6, "	1	17, "	1
8, "	2	18, "	1
9, "	1	19, "	1
10, "	1	20, "	2
11, "	2	28, "	1
12, "	1		
		Total	18

In 12 of the 18 cases, blood cultures and Widal's were positive. In 5 others, Widal's and stool cultures were positive. For one out-of-town case, blood, stool, and urine cultures were negative, but the Widal reaction was positive (*H* 1:40, *O* 1:160).

The attack rates for the civilian group and the SPARS are given by age in Table 1.

December 25 to January 16, when she quit her job, she prepared only part of the orange juice. She began preparation of the juice when she first arrived in the morning. The juice was allowed to stand at room temperature until served. Careful questioning, both of the woman herself and of other employees, could elicit no evidence of other contact on her part with any food

TABLE 1  
Age-specific Attack Rates from Typhoid Fever for Civilians and SPARS

Age in Years	Civilians			SPARS			Total		
	Number Exposed	Number Attacked	Per cent Attacked	Number Exposed	Number Attacked	Per cent Attacked	Number Exposed	Number Attacked	Per cent Attacked
18-19	22	1	4.5	0	0	....	22	1	4.5
20-29	131	14	10.7	136	1	0.07	267	15	5.6
30-39	24	2	8.3	13	0	0.00	37	2	5.4
40+	2	0	0.0	0	0	....	2	0	0.0
Unknown	15	0	0.0	32	0	0.00	47	0	0.0
Total	194	17	8.8	181	1	0.06	375	18	4.8

Results of all water analyses were negative. Three consecutive stool cultures taken not less than 24 hours apart and Widal tests were negative for all but one of the 25 persons handling food. This person was a colored female with a negative history of typhoid fever. Her first stool specimen taken on January 23 was positive for *E. typhosa*. On January 24 the Widal for this individual showed for the *H* antigen plus-minus in dilution of 1:80 and for the *O* antigen positive in dilution of 1:160. Following a second positive stool culture for this individual, she was hospitalized for further study. Positive stool cultures were obtained in the hospital on February 1, 2, 4, and 25.

This woman was first employed by the Home on September 13, 1943, as a dishwasher working only from 6 to 9 A.M. Until December 15 she did nothing but wash dishes. On that day she was given the task of preparing the orange juice for breakfast. She alone prepared orange juice from that date until December 25, at which time she was given assistance, so that from

served, nor was any evidence obtained which would incriminate other articles of food.

SPARS and civilians breakfasted together in the cafeteria. All of the 15 local cases customarily ate breakfast at the hotel.

Fourteen stated that they drank orange juice regularly for breakfast. One girl did not remember whether she had had any during the preceding month. However, the proportion of the non-cases eating breakfast at the hotel who drank orange juice was also high. Out of 220 questioned 199 gave such history. Notwithstanding this fact, it was concluded that orange juice must have been the vehicle.

The distribution of the dates of onset did not suggest a mass infection at one time. There was a proved carrier responsible for only one article of food, orange juice. All but one of the local cases were known to have consumed orange juice. As supporting evidence, orange juice was inoculated with typhoid bacilli isolated from the carrier and incubated at room tempera-

ture. Viable bacilli were recovered up to 6 days after inoculation.

Vaccination records were available for only 143 of the 181 SPARS who were known to have resided at the Home during December and January. The balance had been transferred to other posts and no attempt was made to obtain their records. It may be assumed, however, that all had been vaccinated. Of the 143, all had been immunized against *E. typhosa* since February, 1943, but 12 had received their last dose during October or November. The only case occurring among the SPARS was in an individual in this group who had received her last dose on November 30, 1943. The onset date for this case was given as January 20, less than 2 months later.

Information regarding vaccination was obtained from 194 civilians living in the Home. Seven of these individuals had had a previous attack of typhoid fever. Of 27 who claimed to have had 3 doses of typhoid vaccine 13 had been vaccinated prior to 1941 and 14 subsequently. One claimed to have only one dose and 2 did not know how

many doses had been given. No cases occurred among those with history of a previous attack or with history of any vaccination. Seventeen cases occurred among the 140 remaining members of the group.

Combining the two groups and omitting the 7 who had had previous attacks, there were 368 individuals for whom immunization histories were known. If all persons giving history of immunization, regardless of the number of doses or date on which it was given, be considered as immunized, there were 211 immunized persons. Among these only 1 case occurred. Among the 140 who were not immunized there were 17 cases, giving an attack rate of 12.1 per cent. If the immunized had suffered this rate of incidence there would have been about 25 cases in the group. That such a difference could have occurred by chance is of course highly improbable. So far as could be ascertained the exposure of the two groups was on the average equal, accepting orange juice as the vehicle. It is concluded therefore, that the difference must be attributed to active immunization.

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## Placement Unit for Nurses

The United States Employment Service has opened a counseling and placement office at 119 West 57th Street, New York, N. Y., for Army and Navy nurses and other veterans of the medical services of the armed forces. An advisory committee representing the fields of medicine, nursing, and public health is serving in a consultant's capacity to the new venture. Service is on a 24 hour basis and without charge to the registrant.

Approximately 50,000 persons from the New York City area have served in medical and health assignments in military service. Many will wish to find new positions on their return to civilian life, or to prepare themselves by additional education for a specialty. The U.S.E.S. is organized to give advice and information regarding special training under the G.I. Bill of Rights as well as to fill the needs of employers seeking qualified personnel.

# Epidemiological Studies on Infectious Hepatitis\*

WALTER P. HAVENS, JR., MAJOR, MC, AUS

*Section of Preventive Medicine, Yale University School of Medicine,  
New Haven, Conn.*

IT is largely due to the military importance<sup>1-17</sup> of infectious hepatitis that renewed interest has been stimulated in this disease. Numerous reports have recently described its prevalence, particularly in the Mediterranean area where it has occurred among American,<sup>14, 16, 17</sup> British,<sup>6, 8, 11-13</sup> Italian,<sup>7</sup> French,<sup>1</sup> and German<sup>2-4</sup> troops as well as the civilian population of Palestine.<sup>18-20</sup> Although the relationship is not known, there is no reason to believe that this type of infectious hepatitis differs from that seen in outbreaks of epidemic jaundice which have been noted in the United States,<sup>21-23</sup> or differs from the disease which has been frequently described as infective hepatitis in England,<sup>24-26</sup> or as *hepatitis epidemica* in Scandinavia,<sup>27</sup> Germany,<sup>28, 29</sup> and many other parts of the world. There is also no ready means of differentiating it from catarrhal jaundice<sup>9, 10</sup> except that the latter term has been reserved more for sporadic than epidemic cases. Furthermore, it is not clear whether post-vaccinal hepatitis,<sup>30-36</sup> transfusion jaundice,<sup>37, 38</sup> and homologous serum jaundice<sup>39-49</sup> may not all be examples of the artificial production of the same disease. The lack of susceptible laboratory animals and specific immunologic tests has

made more difficult the solution of these obscurities. These and other questions are unsettled and deserve further study but on a few points at least there is agreement, namely, infectious hepatitis can be differentiated from spirochetal jaundice (Weil's disease) and from yellow fever; it also can be differentiated from the jaundice of infectious mononucleosis, of malaria, and certain other infections.

It is strange that a disease which is so common and has become so important from a military standpoint should have been so poorly defined until recently. Only a limited number of authors such as Blumer<sup>21</sup> and a few others<sup>22, 23, 50</sup> have called attention to the public health aspects of infectious hepatitis in this country.

It is the object of this paper to review these aspects in the light of new information and to mention experiments with human volunteers which are related to the epidemiology of the disease.

## EPIDEMIOLOGY

*Geographic Distribution:* Reports of 19th century outbreaks cover a wide area and it is probable that infectious hepatitis occurs throughout the entire world, but in the absence of specific diagnostic tests its exact distribution is unknown. In 1923 Blumer<sup>21</sup> assembled information on many epidemics which had occurred in almost every section of the United States. Outbreaks have also

\* Representing work done for the Neurotropic Virus Disease Commission of the Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, in the Preventive Medicine Service of the Office of The Surgeon General, U. S. Army, Washington, D. C.

been reported from Iceland,<sup>51</sup> England,<sup>24-26</sup> Europe,<sup>3, 53</sup> Scandinavia,<sup>52</sup> Poland and Rumania,<sup>2</sup> India,<sup>51</sup> and Africa.<sup>55</sup> The eastern half of the Mediterranean area<sup>6, 16, 17, 60</sup> represents a region where this disease has been particularly prevalent among troops both in World Wars I and II with cases numbering in the tens of thousands in the years 1941-1944. Native populations either civilian or military, in the "epidemic areas" are usually less susceptible than are troops or immigrants from abroad. Little is known of the general climatic or exact environmental conditions which influence its spread, but at least these are not sharply limited to any particular latitude. It is universally agreed, however, that this disease flourishes best under poor sanitary conditions.

*Season:* In certain parts of the world there is a distinct and rather sharp seasonal trend with an increase in prevalence coming on in the fall of the year and often building up to epidemic proportions during late fall and early winter. The epidemic season is by no means limited to fall and early winter, however, for as has been the case in this country, it may begin in the fall and extend through the whole winter and well into the spring. The explanation of this seasonal trend is unknown.

*Age:* In the United States and many other areas, infectious hepatitis is commonly seen in the civilian population as a disease of childhood. The age group in which most of the epidemic cases fall ranges from 5 to 17 years. It is common enough too, however, among young adults, to which military epidemics, as well as outbreaks among university students testify. Inasmuch as the childhood form of this disease is very mild and easily overlooked, it has been suggested that infectious hepatitis is far more common than is usually realized, and that most

adults have been exposed in early life and have even had the disease in unrecognized form, so that they have acquired a certain degree of immunity.

*Epidemics:* In civilian populations, outbreaks which involve several hundred people (usually children) over a period of one or two months are common. Institutional and family outbreaks are traditional. Favored sites are institutions, camps for children, and military camps. In orphan asylums, as many as one-quarter or one-third of the population may be infected. In families the usual sequence of events is, that one member first acquires the disease and then 3 or 4 weeks later it appears in one or more other members. Within military units the case rate can occasionally reach such proportions as 40 or 50 per cent of the total command. Such severe epidemics have, as mentioned before, occurred under poor sanitary conditions, often when and where dysentery is or has been rife.

*Predisposing factors* which may affect host resistance to this particular infection are probably important, particularly under military circumstances, although their existence rests on circumstantial evidence alone. They are: poor diet, alcohol, poor living conditions, exposure during active campaigns.

A high prevalence of hepatitis in syphilitic patients undergoing intravenous therapy has been noted on more than one occasion. It is not clear whether this is due to an increased vulnerability of the liver for invasion by the virus, or to the possible artificial transmission of serum jaundice.<sup>56</sup>

*Incubation Period:* In most epidemics this period has been estimated to be between 20 and 40 days, averaging 26-28 days. In experimental human cases, induced by feeding serum or feces, the average incubation period has been 25 days. It may occasionally be as short as 16 days or prolonged to 85 days.

*Natural Transmission:* For information on this point one would be concerned about the circumstances under which epidemics occur and it is well to recall that water-borne epidemics have been reported.<sup>32, 37</sup> Recently Neeffe and Stokes<sup>58</sup> have reported the transmission of hepatitis without jaundice to human volunteers by the oral administration of water from a well of a children's camp where a large outbreak of infectious hepatitis had occurred. This may represent one manner in which infectious hepatitis normally spreads although it is probable that other ways also exist. There is good evidence to suspect the intestinal-oral circuit as one of the natural routes of spread. This theory is based in part on field observations and in part on the investigative work quoted below, which indicates that the virus is in the feces during the acute phase of the disease, and that infectious hepatitis can be transmitted to human volunteers by feeding infected feces. It fits in with facts observed in military populations, with its high prevalence in areas where camp sanitation is bad, and its frequent association with intestinal diseases. Kirk's<sup>59</sup> study of infectious hepatitis, among New Zealand soldiers at El Alamein in Egypt in 1942, led him to believe that the disease was spread by flies carrying the infection from human excreta. It has further been suspected that the prevalence of bacillary dysentery or Salmonella infections may either predispose in some unknown way to the acquisition of hepatitis or that these organisms are prone to act as secondary invaders.<sup>60, 61</sup>

The question of possible transmission by biting insects also deserves consideration, for a disease which is obviously infectious, and in which the virus is in the blood, should be regarded potentially as a disease which might be spread by blood sucking insects, until proved otherwise.

In this connection its artificial spread through the use of improperly sterilized syringes is a point of consideration described by Droller.<sup>62</sup> The extreme viability of the icterogenic agent, the infectiousness of small (0.01 ml.) quantities of serum, all point to the fact that it has probably been transmitted artificially more often than is realized. These impressions should all be reviewed critically in the light of newer experimental work on this disease.

*Etiologic Agent:* As yet this so-called icterogenic agent has not been actually "isolated" in the sense that it has been seen, cultured, or transmitted experimentally to laboratory animals. This agent or "virus" is present in the blood and feces of patients in the pre-icteric and early icteric phases of the disease; it may also be present in the urine at this time. It withstands heating to 56° C. for at least ½ hour.<sup>70</sup> It has also been filtered through bacteria tight filters and for this reason, has been classified as a virus.<sup>67, 69, 70</sup> Data on the limits of time (during the incubation and during the active disease) in which this "virus" may be found in the human peripheral blood are scanty, but there is good reason to believe that the pre-icteric and early icteric stage is the period in which the virus is most readily demonstrable in the blood and feces. The limits of the intestinal carrier state remain to be accurately determined.

Attempts to infect common laboratory animals,<sup>6, 71</sup> including many rodents, many species of monkeys, and even chimpanzees,<sup>72</sup> have failed. It is possible that the "jaundice" transmitted to pigs in Denmark by Andersen<sup>73</sup> was infectious jaundice of this type. More recently German workers claim not only to have propagated this agent in the developing chick embryo,<sup>74, 75</sup> but to have infected birds<sup>76, 77</sup> with it. These reports have not however, been confirmed.<sup>78</sup> To

TABLE 1

*Experimental Infectious Hepatitis Produced in Human Volunteers by Various Investigators*

	Author and Reference	Year	Inoculum	Route	Number *		
					Tested	Jaun- diced	Incubation Period
Oral	Voegt—63	1942	Duodenal Fluid	Oral	4	1†	28
	Voegt—63	1942	Urine	Oral	?	1	?
	Voegt—63	1942	Blood	Oral	?	1	?
	MacCallum and Bradley—64	1944	Feces	N. & P.	26	3	27-31
	Havents, et al.—65	1944	Feces (frozen) (extr. dried)	Oral	3	2	20-22
	Havens—70, 86	1945	Serum	Oral	5	4	23-34
	Havens—79	1945	Feces	Oral	3	2	16-17
	Findlay and Wilcox—67	1945	Feces	Oral	18	7†	17-28
	Findlay and Wilcox—67	1945	Urine	Oral	6	3†	?
	Neeffe, et al.—58, 68, 69	1945	Feces	Oral	72	31	19-33
Parenteral	Neeffe and Stokes—58	1945	Serum	Oral	3	2	26-33
	Voegt—63	1942	Serum	Sc.	?	1	19†
	Cameron—8	1943	Blood Serum	Im.	6	6	3 & 30+
	Oliphant—66	1944	Serum	Sc.	21	4	85-106
	MacCallum and Bradley—64	1944	Serum	Sc.	6	3	64-92
	Havens—70, 86	1945	Serum	Sc. & Ic.	17	9	20-31~

\* The occurrence of sub-clinical and sub-icteric hepatitis is recognized but in this table only patients who developed jaundice are included

† Author did not mention specifically whether jaundice occurred.

N. = Intranasal. P. = Intrapharyngeal. Sc. = Subcutaneously.

Im. = Intramuscularly. Ic. = Intracutaneously.

date therefore, almost all of the properties of this virus have been determined by using man as the experimental animal. Such experiments on human volunteers have also yielded some information as to the routes with which man can be readily infected.

#### TRANSMISSION EXPERIMENTS WITH HUMAN VOLUNTEERS

In the search for the natural mode of transmission of infectious hepatitis various experiments have been reported of infection following feeding icterogenic material to human volunteers. In Table 1 are recorded all of the positive results with jaundice reported so far, of attempts to infect human volunteers with infectious hepatitis by both the oral and parenteral routes.

The early work of Voegt<sup>63</sup> probably showed that in patients with infectious hepatitis the duodenal contents taken on the 24th and 30th days of disease and possibly urine and hemolyzed

erythrocytes, are infectious when fed to human volunteers.

More recently MacCallum and Bradley<sup>64</sup> have demonstrated that the stools of patients in the pre-icteric state or in the first days of jaundice of infectious hepatitis contain an icterogenic agent which can be transmitted to human volunteers by feeding, producing infectious hepatitis after an incubation period of 27-31 days.

These latter results have been confirmed and somewhat enhanced by experiments conducted by the Neurotropic Virus Disease Commission of the U. S. Army.

The strain of infectious hepatitis virus used in this laboratory was originally obtained from the stool of a patient (BE) who contracted epidemic infectious hepatitis in Sicily.<sup>65</sup> This agent has been through three passages in human volunteers and is regularly present in the feces and serum of patients in the pre-icteric or early icteric

phase. Eleven human volunteers have been fed either feces or serum containing this strain of icterogenic agent, and of these, 8 have contracted infectious hepatitis with incubation periods ranging from 16 to 34 days. The ease of experimental transmission by feeding and the presence of virus in the feces indicate that the intestinal-oral route may be of importance in the natural spread of the disease.

It is of interest that when inoculated parenterally (in serum) the work of others has shown that different strains of "virus" produced infectious hepatitis with varying incubation periods. In this laboratory 17 volunteers have been inoculated subcutaneously and intracutaneously, and of these, 9 contracted the disease after 20-31 days. These results are in agreement with some and in contrast with those of certain other workers, employing different strains; the latter frequently have found much longer incubation periods following parenteral inoculation of human volunteers with infectious serum (see Table 1).

Such divergent results in the reports of various groups of investigators suggest that different strains of virus may exist. This is supported in part by recent work in this laboratory with one strain in which an effort was made to determine if size of dose or route of inoculation had any effect on the length of incubation period of infectious hepatitis caused by our strain of virus. In one experiment equal amounts of the same icterogenic agent were fed and inoculated parenterally into human volunteers.<sup>70</sup> In another experiment the same icterogenic agent was inoculated in graded amounts of the order of 1-, 10-, and 50-fold increasing doses (0.01 ml. to 0.5 ml. of infectious serum).<sup>79</sup>

The results revealed no appreciable difference in the incubation period dependent on route of inocula-

tion or size of dose, in the range of dosage used.

#### IMMUNITY IN INFECTIOUS HEPATITIS

The natural history of the disease supports the concept of a widespread immunity in the general population, incited by clinical or subclinical infection. Suggestive evidence along this line has been offered recently by Stokes and Neefe<sup>80</sup> and others<sup>81, 82</sup> in their demonstration of the protective effect of human gamma globulin against infectious hepatitis when administered during the incubation period. Preliminary experiments<sup>83</sup> with human volunteers indicate that an attack of infectious hepatitis provides immunity against reinfection with a similar strain of virus.

The question of whether the immunity resulting from a single attack is effective against multiple strains of the virus deserves much more study. It has already been pointed out, for instance, that the immunologic relationship between the naturally occurring disease, infectious hepatitis, and homologous serum jaundice is poorly defined. The etiologic agent, or agents, of the two conditions have certain properties in common: both are filtrable and withstand heating to 56° C. for at least 30 minutes. Both conditions may be transmitted by parenteral inoculation. Infectious hepatitis can be transmitted to man by the oral route and the etiologic agent is in the stools. In contrast to this the agent of homologous serum jaundice has not been demonstrated in the stool,<sup>68, 84</sup> and successful transmission experiments by the oral route are limited.<sup>85</sup>

But, as mentioned, the question of cross-immunity between these two conditions requires clarification. Men who have had serum jaundice do acquire infectious hepatitis. Experimentally, the evidence for cross-immunity is contradictory. Oliphant<sup>66</sup> has demonstrated



protection against a strain of infectious hepatitis in patients convalescent 9-18 months from homologous serum jaundice while the results in our laboratory<sup>86</sup> have failed to show such protection; for when patients convalescent 6 months from homologous serum jaundice were reinoculated with a strain of infectious hepatitis they contracted the latter disease.

### SUMMARY

The epidemiological features of infectious hepatitis and the experiments on the transmission of this disease to human volunteers have been reviewed.

Evidence has been cited that the etiologic agent is filtrable and is in the stool, serum, and possibly urine of patients in the acute phase of the disease. It may probably be classified as a virus. Other properties including its resistance to heat and transmissibility to human volunteers by feeding or parenteral inoculation have been discussed.

The fact that this agent is in the stool and may be transmitted by feeding to human volunteers suggests that the intestinal-oral route may be important in the natural spread of the disease.

### REFERENCES

1. Senevet, G., Montrier, P., Gros, H., Alcay, L., and Bougarel, R. A Propos de l'Ictère de Tunisie. *Arch. Inst. Pasteur d'Algerie*, 19:47 (Mar.), 1941.
2. Nothilaas, R. Beobachtungen ueber Epidemischen Icterus. *Deutsch. mil.-arztl. Ztschr.*, 8:247 (May), 1943.
3. Hellmann, R. Truppenärztliche Beobachtungen ueber Die Hepatitis Epidemica in der Libyschen Wüste. *Deutsch. Tropenmed. Ztschr.*, 47:13-14:354 (July 1), 1943.
4. Kern, Paul. Erfahrungen aus dem Ostfeldzug. *Munchen. med. Wchnschr.*, 89:1005 (Nov. 27), 1942.
5. Infective Hepatitis. *Bull. War Med.*, 3:394 (Mar.), 1943.
6. van Rooyen, C. E., and Gordon, I. Some Experimental Work on Infective Hepatitis in M.E.F. *J. Roy. Army M. Corps*, 79:213 (Nov.), 1942.
7. di Benedetta, V. Contributo alla Conoscenza dell'epatite epidemica fra le Truppe in Sicilia. *La Settimane Medica*, 30:21, 1942.
8. Cameron, J. D. S. Infective Hepatitis. *Quart. J. Med.*, 12:139 (July), 1943.
9. Problems of Infectious Jaundice (Editorial). *J.A.M.A.*, 122:1186 (Aug. 21), 1943.
10. Epidemic Hepatitis or Catarrhal Jaundice (Editorial). *J.A.M.A.*, 123:636 (Nov. 6), 1943.
11. Dixon, H. B. F. Notes on Infective Hepatitis in Malta, 1938-1942. *J. Roy. Army M. Corps*, 82:44 (Jan.), 1944.
12. Spooner, E. T. C. The 1942 Epidemic of Infective Hepatitis in the Middle East. *Proc. Roy. Soc. Med.*, 37:171 (Feb.), 1944.
13. Gear, H. S. Hygiene Aspects of the El Alamein Victory, 1942. *Brit. M. J.*, 1:383 (Mar. 18), 1944.
14. Hepatitis in North Africa. *Bull. U. S. Army Med. Dept.*, 76:23, 1944.
15. Witts, L. J. Some Problems of Infective Hepatitis. *Brit. M. J.*, 1:739 (June 3), 1944.
16. Havens, W. P., Jr. Infectious Hepatitis in the Middle East: A Clinical Review of 200 Cases Seen in a Military Hospital. *J.A.M.A.*, 126:17 (Sept. 2), 1944.
17. Barker, M. H., Capps, R. B., and Allen, F. W. Acute Infectious Hepatitis in the Mediterranean Theater. *J.A.M.A.*, 128:997 (Aug. 4), 1945.
18. Jossem, J. On the Problem of Endemic Jaundice (icterus endemicus). *Harfeuah*, Jerusalem, 19:4 and 5 (Oct. and Nov.), 1940 (In Hebrew). English Summary (Nov.), 5:31. (Abst.) *Bull Hyg.*, 16:273 (June), 1941.
19. Infectious Hepatitis in Palestine (Foreign letter). *J.A.M.A.*, 123:1062 (Dec. 18), 1943.
20. Kligler, I. J., Btsh, D. S., and Koch, W. Observations on Two Epidemics of Infective Hepatitis in Palestine among Recent Immigrants. *J. Infect. Dis.*, 74:234 (May-June), 1944.
21. Blumer, G. Infectious Jaundice in the United States. *J.A.M.A.*, 81:353 (Aug. 4), 1923.
22. Norton, J. A. Acute Infectious Jaundice. *J.A.M.A.*, 113:916 (Sept. 2), 1939.
23. Molner, J. G., and Meyer, K. F. Jaundice in Detroit. *A.J.P.H.*, 30:509 (May), 1940.
24. Follows, A. B. Epidemic Catarrhal Jaundice. *Med. Off.*, 63:23 (Jan. 20), 1940.
25. Ford, J. C. Infective Hepatitis (epidemic catarrhal jaundice): Three Hundred Cases in an Outer London Borough. *Lancet*, 1:675 (May 29), 1943.
26. Edwards, L. R. L. An Outbreak of Epidemic Catarrhal Jaundice. *Brit. M. J.*, 1:474 (Apr. 17), 1943.
27. Stuhlfauth, K. Epidemic Jaundice: Group Outbreak amongst Soldiers and Civil Population in Norway. *Deutsche mil.-arztl. Ztschr.*, 5:591 (Oct.), 1941 (Abst.) *Bull. War Med.*, 3:213 (Dec.), 1942.
28. Dietrich, S. Der sogenannte katarrhalische Icterus und die Hepatitis epidemica. *Deutsche med. Wchnschr.*, 68:5 (Jan. 2), 1942.
29. Gutzeit, K. Icterus Infectiosus. *Munchen med. Wchnschr.*, 89:161 (Feb. 20), 185 (Feb. 27), 1942.
30. Soper, F. L., and Smith, H. H. Yellow Fever Vaccination with Cultivated Virus and Immune and Hyperimmune Serum. *Am. J. Trop. Med.*, 18:111 (Mar.), 1938.
31. Fox, J. P., Manso, C., Penna, H. A., and Pará, M. Observations on the Occurrence of Icterus in Brazil Following Vaccination Against Yellow Fever. *Am. J. Hyg.*, 36:68 (July), 1942.
32. Oliphant, J. W., Gilliam, A. G., and Larson, C. L. Jaundice Following Administration of Human Serum. *Pub. Health Rep.*, 58:1233 (Aug. 13), 1943.
33. Findlay, G. M., and MacCallum, F. O. Hepatitis and Jaundice Associated with Immunization Against Certain Virus Diseases. *Proc. Roy. Soc. Med.*, 31:799 (May-Oct.), 1938.
34. Findlay, G. M., Martin, N. H., and Mitchell, J. B. Hepatitis After Yellow Fever Inoculation. *Lancet*, 1:301 (Sept. 2), 340 (Sept. 9), 365 (Sept. 16), 1944.
35. Turner, R. H., Snively, J. R., Grossman, E. B., Buchanan, R. N., and Foster, S. O. Some Clinical Studies of Acute Hepatitis Occurring in Soldiers After

- Inoculation With Yellow Fever Vaccine: With Especial Consideration of Severe Attacks. *Ann. Int. Med.*, 20:193 (Feb.), 1944.
36. Sawyer, W. A., Méyer, K. F., Eaton, M. D., Bauer, J. H., Putman, P., and Schwenker, F. F. Jaundice in Army Personnel in the Western Region of the United States and Its Relation to Vaccination, Against Yellow Fever. *Am. J. Hyg.*, 39:337 (May), 40:35 (July), 1944.
37. Rappaport, E. M. Hepatitis Following Blood or Plasma Transfusions. *J.A.M.A.*, 128:932 (July 28), 1945.
38. Hepatitis After Transfusion (Editorial). *Brit. M. J.*, 2:279 (Aug. 26), 1944.
39. McNalty, A. S. Acute Infectious Jaundice and Administration of Measles Serum. *Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1937*. H. M. Stationery Office, London, 1938.
40. Propert, S. A. Hepatitis After Prophylactic Serum. *Brit. M. J.*, 2:677 (Sept. 24), 1938.
41. Sergiev, P. G., Tarcev, E. M., Gontaeva, A. A., Livschiz, I. M., Sainrskii, G. N., Trofimovskii, N. A., and Zimmerman, A. N. Virus Jaundice: Epidemic Hepatitis in Relation to Immunization With Human Serum. *Terapevticheski Arkhiv.*, 18:595, 1940.
42. Morgan, H. V., and Williamson, D. A. J. Jaundice Following Administration of Human Blood Products. *Brit. M. J.*, 1:750 (June 19), 1943.
43. Homologous Serum Jaundice: Memorandum Prepared by Medical Officers of the Ministry of Health. *Lancet*, 1:83 (Jan. 16), 1943.
44. Infective Hepatitis and Serum Jaundice (Editorial). *Lancet*, 1:683 (May 29), 1943.
45. Homologous Serum Jaundice (Editorial). *Brit. M. J.*, 2:602 (Nov. 4), 1944.
46. Neefe, J. R., Miller, T. G., and Chornock, F. W. Homologous Serum Jaundice. *Am. J. M. Sc.*, 207:626, 1944.
47. Neefe, J. R., Stokes, J., Jr., Reinhold, J. G., and Lükens, F. D. W. Hepatitis Due to the Injection of Homologous Blood Products in Human Volunteers. *J. Clin. Investigation*, 23:836 (Sept.), 1944.
48. Beeson, P. B., Chesney, G., and MacFarlan, A. M. Hepatitis Following Injection of Mumps Convalescent Plasma. *Lancet*, 1:814 (June 24), 1944.
49. Bradley, W. H., Loutit, J. F., and Maunsell, K. Episode of "Homologous Serum Jaundice." *Brit. M. J.*, 2:263 (Aug. 26), 1944.
50. McLeod, K. W. An Epidemic of Common Infectious Jaundice. *J. Pediat.*, 24:454, 1944.
51. Infective Hepatitis. War Office, Army Med. Dept. *Bull. No. 15*, 1 (Oct.), 1942.
52. Hallgren, R. Epidemic Hepatitis in the County of Vasterbotten in Northern Sweden. An Epidemiological and Clinical Study. *Acta Med. Scandinav.*, Supp 140, 1942.
53. Nélis, P., and von den Branden, F. Au Sujet d'une Epidémie de Jaunisse Catarrhale. *Bull. Office internat. d'hyg. pub.*, 28:514, 1936.
54. Byrne, E. A. J., and Taylor, G. F. An Outbreak of Jaundice With Signs in the Nervous System. *Brit. M. J.*, 1:477 (Apr. 7), 1945.
55. Oram, S. Infective Hepatitis in Nigerian Troops. *J. Roy. Army M. Corps*, 84:201, 1945.
56. Beattie, J., and Marshall, J. The Aetiology of Post-arsphenamine Jaundice. *Brit. M. J.*, 1:547 1944.
57. Fraser, R. A Study of Epidemic Catarrhal Jaundice. *Canad. Pub. Health J.*, 22:396, 1931.
58. Neefe, J. R., and Stokes, J., Jr. An Epidemic of Infectious Hepatitis Apparently Due to a Water Borne Agent. *J.A.M.A.*, 128:1063 (Aug. 11), 1945.
59. Kirk, R. Spread of Infective Hepatitis. *Lancet*, 1:50 (Jan. 20), 1945.
60. Sarraillhé, A., and Clunet, J. La "jaunisse des camps" et l'Epidémie de Paratyphoïde des Dardanelles. *Bull. et mem. Soc. med. d. hop. de Paris*, 40:563 (3s), 1916.
61. Havens, W. P., Jr., and Wenner, H. A. Infectious Hepatitis Complicated by Secondary Invasion With Salmonella. (To be published.)
62. Droller, H. An Outbreak of Hepatitis in a Diabetic Clinic. *Brit. M. J.*, 1:623 (May 5), 1945.
63. Voegt, H. Zur Aetologie der Hepatitis Epidemica. *München. med. Wchnschr.*, 89:76 (June 23), 1942, (Abst.) *Bull. Hyg.*, 17:331 (May), 1942.
64. MacCallum, F. O., and Bradley, W. H. Transmission of Infective Hepatitis to Human Volunteers. *Lancet*, 2:228 (Aug. 12), 1944.
65. Havens, W. P., Jr., Ward, R., Drill, V. A., and Paul, J. R. Experimental Production of Hepatitis by Feeding Ieterogenic Materials. *Proc. Soc. Exper. Biol. & Med.*, 57:206, 1944.
66. Oliphant, J. W. Infectious Hepatitis: Experimental Study of Immunity. *Pub. Health Rep.*, 59:1614 (Dec. 15), 1944.
67. Findlay, G. M., and Wilcox, R. R. Transmission of Infective Hepatitis by Faeces and Urine. *Lancet*, 1:212 (Feb. 17), 1945.
68. Neefe, J. R., Stokes, J., Jr., and Reinhold, J. G. Oral Administration to Volunteers of Feces from Patients With Homologous Serum Hepatitis and Infectious (Epidemic) Hepatitis. *Am. J. M. Sc.*, 210:29 (July), 1945.
69. Neefe, J. R., Stokes, J., Jr., Baty, J. B., and Reinhold, J. G. Disinfection of Water Containing Causative Agent of Infectious (Epidemic) Hepatitis. *J.A.M.A.*, 128:1076 (Aug. 11), 1945.
70. Havens, W. P., Jr. Properties of the Etiologic Agent of Infectious Hepatitis. *Proc. Soc. Exper. Biol. & Med.*, 58:203, 1945.
71. Unpublished observations of the author.
72. Havens, W. P., Jr., and Ward, R. Failure to Transmit Infectious Hepatitis to Chimpanzees. *Proc. Soc. Exper. Biol. & Med.*, 60:102 (Oct.), 1945.
73. Andersen, T. T., and Tulinius, S. Etiology of Hepatitis Epidemica (Epidemic Jaundice). *Acta med. Scandinav.*, 95:497, 1938.
74. Siede, W., and Meding, G. Zur Aetologie der Hepatitis Epidemica. *Klin. Wchnschr.*, 20:1065 (Oct. 25), 1941.
75. Siede, W., and Luz, K. Zur Aetologie der Hepatitis Epidemica. *Klin. Wchnschr.*, 22:70 (Jan. 23), 1943.
76. Dresel, E. G., Meding, G., and Weineck, E. Über das Virus der Hepatitis Epidemica. *Ztschr. f. Immunitätsforsch u. exper. Therap.*, 103:129 (June 10), 1943.
77. Herzberg, K. Der Kanarienvogel als Versuchstier in der Hepatitis contagiosa-Forschung. *Klin. Wchnschr.*, 22:676 (Oct. 30), 1943.
78. Hoyle, L. A Note on Some Unsuccessful Attempts to Demonstrate a Virus in Infective Hepatitis. *Med. Res. Council Monthly Bull.* Ministry of Health and Emergency Pub. Health Lab. Service, 2:99 (Oct. 5), 1945.
79. Unpublished observations of the author.
80. Stokes, J., Jr., and Neefe, J. R. The Prevention and Attenuation of Infectious Hepatitis by Gamma Globulin. *J.A.M.A.*, 127:144 (Jan. 20), 1945.
81. Gellis, S. S., Stokes, J., Jr., Brother, G. M., Hall, W. M., Gilmore, H. R., Beyer, E., and Morrissey, R. A. The Use of Human Immune Serum Globulin (Gamma Globulin) in Infectious (Epidemic) Hepatitis in the Mediterranean Theater of Operations. I. Studies on Prophylaxis in Two Epidemics of Infectious Hepatitis. *J.A.M.A.*, 128:1062 (Aug. 11), 1945.
82. Havens, W. P., Jr., and Paul, J. R. Prevention of Infectious Hepatitis With Gamma Globulin. *J.A.M.A.*, 129:270 (Sept. 22), 1945.
83. Unpublished observations of the author.

84. MacCallum, F. O. Transmission of Arsenotherapy Jaundice by Blood: Failure With Faeces and Nasopharyngeal Washings. *Lancet*, 1:342 (Mar. 17), 1945.

85. MacCallum, F. O., and Bauer, D. J. Homologous Serum Jaundice: Transmission Experiments With Human Volunteers. *Lancet*, 1:622 (May 13), 1944.

86. Havens, W. P., Jr. Experiment in Cross Immunity Between Infectious Hepatitis and Homologous Serum Jaundice. *Proc. Soc. Exper. Biol. & Med.*, 59:148, 1945.

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## The Nobel Prize Awards

Sir Alexander Fleming, of London, and Sir Howard W. Florey and Dr. Ernst B. Chain, of Oxford University, recently were awarded the 1945 Nobel Prize for physiology and medicine. The 1943 award was made to Drs. Edward A. Doisy, Professor of Biochemistry at the St. Louis University School of Medicine, and Henrik Dam of Copenhagen, who was in the United States at the time. The 1944 award was presented to Drs. Joseph Erlanger, Professor of Physiology at Washington University School of Medicine, St. Louis, and Herbert Spencer Gasser, Director of the Rockefeller Institute, New York. According to the Stockholm announcement, the 1945 award is made

in recognition of the pioneer work of these three investigators in the discovery of penicillin and its healing effects in treating infections. The recipients will share equally in the prize, which amounts to about \$30,000. Fleming's discovery of penicillin as an antibiotic agent was published in 1929; Florey and Chain demonstrated a method of obtaining penicillin in relatively pure form and first employed this substance clinically during the years 1938 to 1940. Fleming, Florey, and Chain are universally recognized as the pioneers in penicillin research, although other workers have contributed greatly to the preparation of penicillin and its clinical use today.

# Proposed Report on the Educational Qualifications of Nutritionists in Health Agencies<sup>\*†</sup>

## I. GENERAL SCOPE OF THE FIELD

In view of the great advance in the science of nutrition and the realization on the part of public health workers that proper nutrition of individuals plays an important part in maintaining well-being, there is an increasing demand for properly trained workers to carry on nutrition programs in the field of public health.

The past few years have seen a marked increase in the employment of nutritionists by public health agencies, both official and voluntary. The same period has marked the beginning of research in nutritional status and food consumption as a function of public health agencies and also of nutrition service as an aspect of industrial hygiene.

Many official public health agencies are charged with responsibility for institutional care of fairly large numbers of people, notably in tuberculosis sanatoria and in hospitals and wards for the care of crippled children. In these institutions, the dietary department requires competent supervision both because diet is such an important aspect of treatment and also because food is likely to be one of the major items in the budget.

It is estimated that there are at least 400 public health nutritionists at work at the present time. Official public health agencies (state, county, and city) undoubtedly lead in the employment of nutritionists, with the American National Red Cross and its local chapters in second place. Among other health agencies maintaining nutrition service are: visiting nurse associations, community health councils, and tuberculosis associations. Although the war has given impetus to the public health nutrition movement, very few agencies would seem to have built up such large staffs as to point to marked retrenchment with the return to peacetime health programs.

Because of the developments listed above, public health agencies are seeking not only more nutritionists but nutritionists capable of performing specialized functions and of supervising the services of staff workers in positions of lesser responsibility. The original report on Educational Qualifications of Nutritionists in Health Agencies (approved by the Governing Council of the American Public Health Association, October 13, 1941) covered only the type of position most common at that time, namely that of a consultant who works under the administrative direc-

\* The Committee on Professional Education of the American Public Health Association publishes this report before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticisms and suggestions in the further consideration of the report. Suggestions should be mailed promptly to the Committee on Professional Education, A.P.H.A., 1790 Broadway, New York 19, N. Y.

This report, like all other statements of the committee on professional and technical qualifications in

public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

† This proposed report is a revision of the Report on the Educational Qualifications of Nutritionists in Health Agencies approved by the Governing Council on October 13, 1941, and is intended to supersede the earlier report. It has been approved for publication in the respective Journals of the American Dietetic Association and the American Home Economics Association by their Executive Boards, with minor editorial changes.

tion of a major division of the health agency and who is largely responsible for the technical content of her program.

The report has been widely used by (1) colleges and universities training nutritionists and those arranging public health nutrition curricula; (2) administrators of civil service and merit systems; (3) employers selecting nutritionists, and (4) individuals preparing themselves for service in this field or arranging additional preparation for themselves or their staff.

Although the recommendations have proved helpful, their limitations have become increasingly evident. The subcommittee is agreed that the time has come to act on the implied promise in the footnote to the original report: "This report like all other statements of the Association on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought." The recommendations that follow cover the principal types of nutrition positions in the field of public health at the present time. It is impracticable to insist that all present incumbents comply with these requirements; they are recommended for application to candidates applying for appointment.

## II. STATEMENT OF FUNCTIONS

A. The nutritionist in a public health agency is a qualified professionally trained person who directs or carries on a program of activities dealing with the application of the scientific knowledge of nutrition to the promotion of positive health, the prevention of ill health, and the dietary control of disease. The nutrition program of a health agency is directed toward strengthening the service that the agency is rendering in determining the health status of the population served, in dealing with the causes of ill health, in caring for

the sick entrusted to its care, and in promoting well-being among groups and individuals through better food practices.

The function of a highly organized nutrition service of a large health agency will include most, if not all, of the following activities. In smaller health agencies the range of functions will be narrower.

### 1. Organizing and carrying out a program to:

a. Control dietary deficiency diseases through determining their prevalence and distribution and, if they are found to constitute a public health problem of some magnitude, by conducting or participating in clinics for their diagnosis and treatment.

b. Prevent dietary deficiencies and promote health through encouraging wise production or selection and proper processing, preparation, and use of the foods necessary for optimum nutrition. Such programs frequently call for cooperation between the health agency and agencies and organizations in the fields of agriculture, education, welfare, industry, medicine, nursing, and dentistry.

### 2. Studies and surveys:

a. On prevailing food practices of the population of a given area or of special groups, such as school, children, industrial workers.

b. On cost, availability, and use of foods needed to furnish an adequate dietary, these to be used as guides for setting up nutrition programs.

c. On the nutritional status with respect to certain factors of the population of a given area or special groups, such as residents of a home for the aged.

d. On the effect on nutritional status of modifications in the diet.

e. On the effectiveness of nutrition programs in improving food supplies and practices.

3. Preparation and assembling of materials for nutrition education and reviewing the nutrition content of all educational materials prepared or distributed by the agency.

4. Professional education. Participation in the field training of public

health students and in the orientation and in-service training of the staff of the health agency.

a. Imparting to public health workers and allied personnel a working knowledge of human food needs, nutritive values of foods, and methods of improving nutritional status in cooperation with whatever specialized personnel in nutrition may be available in the area served.

b. Participation in the pre-service and in-service training of nutritionists and of workers in related fields, such as educators, social workers, managers of food service in schools, child care centers, or institutions.

5. Consultation services for workers in health or allied agencies in regard to nutritional needs and dietary practices of individuals, families, institutional and industrial groups, or a cross-section of the population of a given area, with the object of planning ways of meeting these needs and improving practices within the resources—actual or potential—of the individuals or groups under consideration.

6. Individual and group instruction of adults and children on food, nutrition, and budgeting, in connection with health conferences or clinics or with the educational or service program of the health agency in schools or the agency's program of community education.

7. Compilation and, if necessary, preparation of nutritionally adequate food market orders, menu plans, and recipes, adjusted to various cost levels, to racial, religious, or regional food practices, and to individuals in unusual circumstances, such as night shift workers or persons living outside of family groups. Similar service for therapeutic and other special diets recommended by physicians.

8. Cooperation with welfare agencies in formulating budget standards for food to meet the nutritive needs of individuals, family groups, and institutions, and in calculating the cost of

standard food budgets at prevailing prices.

9. Inter-agency relationships. Bringing about closer relationships between the health agency and other agencies carrying on educational, service, or research programs in nutrition.

10. Coordination of nutrition programs. Participation in the organization and continuing activity of coordinating councils in the field of nutrition and health and in the organization of communities for unified effort toward the improvement of nutritional status and the maintenance of a satisfactory level of nutrition once attained.

#### B. *Classification of different grades*

The nutrition positions in health agencies may be grouped into 3 grades: (1) The director of a nutrition service in a health agency with responsibility for a staff of workers; (2) the nutritionist who acts primarily as a consultant and neither has responsibility for a staff of workers nor receives close technical supervision; and (3) the staff nutritionist working under close technical supervision from the director of a nutrition service. These grades are described in somewhat more detail in connection with the statements of education and experience under III and IV.

#### III AND IV. BROAD EDUCATIONAL BACKGROUND (UNDERGRADUATE) AND GRADUATE EDUCATION

A. *For a director of a nutrition service in a health agency with responsibility for a staff of workers.* The essential qualifications for the incumbent of this position are broad grasp of the science of human nutrition, knowledge of public health administration, and administrative ability. The director cannot be expert in every aspect of public health nutrition but should be able to recruit and supervise a staff that together will possess competence in all the major

fields. Directors of nutrition services in health agencies may have acquired the necessary qualifications through any one of several backgrounds of education and experience but these backgrounds will have certain elements in common, as indicated in the following paragraphs:

1. Education. Human nutrition should be the subject of major interest. A director of nutrition service should have at least one year of full-time graduate academic credit in addition to the undergraduate academic training leading to a baccalaureate degree or its equivalent in pre-medical training. The combination should be so chosen as to qualify the student for participation as a nutritionist in the public health field.

Colleges and universities offer graduate training in public health nutrition in professional schools of public health or in postgraduate programs in nutrition based on undergraduate preparation in home economics. The content and extent of graduate study required to supply this training will vary according to the type of undergraduate preparation, the interval since such work was completed, the relevancy of any work experience, and the scope of the program directed.

a. The *undergraduate course of study* leading most immediately to preparation for public health nutrition is that qualifying the student for a baccalaureate degree with a major in foods and nutrition as offered in a course in home economics. Such a curriculum includes as a requirement basic courses in chemistry (including physiological or biochemistry), physiology, bacteriology, the social sciences (economics, sociology, and psychology), human nutrition, food study (selection, marketing, preparation), and educational methods. Electives often include introductory courses in statistics, child development, journalism, and public speaking.

b. Students whose undergraduate major has been in the biological sciences, social sciences, education, or pre-medical studies, will need to supplement such preparation with the required courses listed above.

c. The minimum of one year of *full-time graduate academic study* should feature advanced courses in human nutrition, and together with the undergraduate study should give a working knowledge of: methods and techniques of nutrition investigations and dietary studies, child hygiene and development, public health administration, health education, principles of supervision, community organization and resources, and social case work.

d. A course in hospital dietetics accredited by the American Dietetic Association is a desirable addition to other types of graduate preparation but is substitutable only in so far as it carries academic credit in courses essential for public health nutrition. Completion of the requirements for a degree as doctor of medicine or doctor of philosophy in biochemistry constitutes adequate educational preparation for the field of public health nutrition when the students have had full courses for academic credit in human nutrition and its applications in the field of public health.

e. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist should be provided preferably at the graduate level.

## 2. Experience \*

a. Minimum of 4 years of successful, paid experience as a nutritionist in a health agency or a welfare agency carrying on a nutrition and health program. At least one year must have involved responsibility as a supervisor of both professional and clerical staff or as a consultant, or

b. Two years in the above plus 4 years in any one of the following positions or any combination of them:

(1) Therapeutic or teaching hospital dietitian

(2) Physician engaged in clinical medicine, teaching of medical students, research, or public health

(3) Dietitian or nutritionist employed by a food clinic, child development center, school system, nutrition council or committee

(4) Research worker in human nutrition

(5) Teacher of foods and nutrition in a school, college, or university, or adult education program

\* Candidate should have had part of training and experience indicated within 4 years of the time of application.

(6) Agent or food and nutrition specialist in the agricultural extension service or farm security program

### 3. Substitution of education for experience.

Each year of relevant graduate study beyond the minimum of 1 year may be substituted for 1 year of experience except that 2 years of the type of experience described under 2a is not substitutable.

### 4. Personal qualities:

- a. Executive, organizing, and administrative ability
- b. Physical fitness
- c. Ability to gain confidence of administrators and staff and to win and retain cooperation of coworkers and public
- d. Skill in analysis of situations and in presentation of material

*B. For a nutritionist who acts primarily in a consultant capacity and neither has responsibility for supervision of a staff of workers nor receives close technical supervision.* The services rendered may be along either of two lines: (1) general consultation to a given area, or (2) service limited to a special field such as consultation in group or institutional feeding, or conducting a program of discovering and controlling nutritional deficiency diseases.

### 1. Education \*

- a. As outlined in A 1 of this section, undergraduate college work and satisfactory completion of the equivalent of at least 1 year of full-time graduate academic credit, chosen in relation to the previously mentioned basic training so as to qualify the student for participation in the public health field. For service in a special field, the graduate work should provide special training. For example, the consultant in group feeding should have majored in institution administration and completed apprentice training approved by the American Dietetic Association in hospital dietetics, institutional management, or industrial feeding, whereas a nutritionist in charge of a program of diagnosis and control of deficiency disease should have had complete medical training.

b. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist should be provided preferably at the graduate level.

### 2. Experience \*

- a. Minimum of 2 years of successful, paid experience as a nutritionist in a health agency or a welfare agency carrying on a nutrition and health program, or
- b. One year in the above plus 2 years in any one of the positions listed under A2b or any combination of them.

### 3. Substitution of education for experience:

Each year of relevant graduate study beyond the minimum of 1 year may be substituted for 1 year of experience up to a maximum of 1 year for a general consultant or 2 years for a nutritionist assigned to a research project, or a program requiring medical training.

### 4. Personal qualities:

- a. Physical fitness
- b. Executive and organizing ability
- c. Ability to gain and retain confidence and cooperation of fellow workers and public
- d. Skill in analysis of situations and in presentation of material

*C. For a staff nutritionist working under close technical supervision of a director of nutrition service.*

### 1. Education \*

- a. Successful completion of courses qualifying for a degree as outlined in A1 (a and b).
- b. Field work in a health agency carrying on a nutrition program under the supervision of a qualified nutritionist.

### 2. Experience \*

One year of successful paid experience in the fields listed under B 2 (a or b).

### 3. Substitutions for experience:

- a. One year of relevant graduate study may be substituted for 1 year of experience. Or if the agency is in a position to provide

\* Candidate should have had part of training and experience within 4 years of application



systematic orientation and in-service training plus immediate technical supervision from a nutrition director, previous experience need not be required.

4. Personal qualities:

a. Physical fitness

b. Potentialities for developing—

- (1) Executive and organizing ability
- (2) Skill in analysis of situations and presentation of material
- (3) Ability to gain confidence and co-operation of fellow workers and public

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CLAIR E. TURNER, DR.P.H.  
JOHN SUNDWALL, M.D., *Consultant*

The Subcommittee assisting with the preparation of this report, to whom the Committee on Professional Education expresses grateful appreciation, consisted of:

MARJORIE M. HESELTINE, *Chairman*  
HELEN HUNSCHER, PH.D.  
MARTHA KOEHNE, PH.D.  
CATHERINE LEAMY

E. S. ROGERS, M.D.  
W. H. SEBRELL, JR., M.D.  
DOROTHY CARTER, R.N.  
PEARL McIVER, R.N., *Referee*

# Occurrence of *Shigella* Types in the Military Population of the South- eastern United States— 1943 and 1944

MAJOR CARL T. NELSON, M.C., AUS; SECOND LT. ALFRED  
F. BORG, SN.C., AUS; FIRST LT. JOHN SPIZIZEN, SN.C.,  
AUS; AND MARGUERITE J. BARNES

*Fourth Service Command Medical Laboratory, Fort McPherson, Ga.*

IN 1943 and 1944 bacillary dysentery was an important cause of non-effectiveness among troops stationed in the Southeastern United States. Numerous cases occurred in men on field maneuvers but the disease was also relatively common among soldiers and their dependents living under conditions of modern sanitation on or near permanent army installations.\* In addition to the several extensive epidemics of bacillary dysentery observed in this population during the two year period, a large number of sporadic or endemic cases were found scattered throughout the region. This communication deals with the incidence and distribution of *Shigella* types in these non-epidemic cases.

Heretofore, information regarding the occurrence of *Shigella* types in the United States has been scanty. The most comprehensive investigations of this nature yet published are those of McGinnes, *et al.*,<sup>1</sup> Hardy, *et al.*,<sup>2</sup> Mayfield and Gober,<sup>3</sup> and Wheeler.<sup>4</sup> These

authors seem agreed that the so-called Flexner organisms have been the predominant endemic types in this country.

The material presented here represents an analysis of the *Shigella* organisms isolated from 2,119 fecal samples and cultures which were submitted to a large central laboratory for final identification. Only specimens recovered from sporadic cases of acute diarrhea during the years 1943 and 1944 have been included in this study. Cultures obtained from bacteriological surveys of epidemics were excluded in an effort to secure a more accurate index of the relative incidence of *Shigella* types by preventing undue weighting of the data. Since specimens were forwarded to the central laboratory for confirmation regardless of the ease or difficulty in distinguishing the various microorganisms, it is felt that the comparative incidence of *Shigella* types found in this study is probably representative of their relative frequency of occurrence.

## METHODS

Fecal specimens submitted to the central laboratory were shipped in

\* A large proportion of this population was not native to the Southeast but had been assembled from virtually all regions of the United States. In only a relatively few instances, however, had its members ever lived or traveled outside the continental limits of this country.

TABLE 1

*Incidence of Shigella Types Isolated from 2,119 Sporadic Cases of Bacillary Dysentery in the Military Population of the Southeastern United States, 1943-1944*

Shigella Type (After Weil et al. <sup>7</sup> )	Corresponds with		Number of Cultures Identified	Per cent
	Andrews & Inman	Boyd		
I	V	Flexner I	22	33.3
II	W and WX	Flexner II	191	
III	Z	Flexner III	23	
IV		Flexner IV (103)	11	
V		Flexner V (P119)	1	
VI		Flexner VI (88-New-castle, Manchester)	372	
VII	X *		71	0.1
VIII	Y *		15	
X		Boyd II (P288)	2	
XIV		Boyd P274	1	
ambigua		Schmitz	25	1.2
sonnei			1,313	62.0
alkalescens			69	3.3
all other †			3	0.1

\* No longer considered to be valid types. These microorganisms were isolated during the early months of 1943 before a complete set of monovalent absorbed antisera was available in this laboratory.

† Includes atypical forms—2; Sachs type Q771—1.

glycerine-saline preservative. These were cultured on plates of SS (*Shigella-Salmonella*) agar and EMB (eosin-methylene blue) agar by direct inoculation and also after preliminary cultivation in Selenite-F enrichment medium. Suspicious colonies were then picked to Kligler's iron agar slants. Those yielding suggestive or positive Kligler's reactions were studied further by a full series of the customary cultural and biochemical tests. Finally, each culture tentatively classified as a dysentery bacillus was typed serologically by its agglutination reactions in monovalent *Shigella* rabbit antisera. In the early stages of this study the cultures were typed by the tube agglutination method described by Hardy, et al.<sup>5</sup> Later, when a constant supply of carefully absorbed monovalent rabbit antisera became available,\* serological typing was carried out by the slide agglutination technique recommended

by Wheeler.<sup>6</sup> When previously isolated cultures were sent to the central laboratory, they were first re-streaked on EMB and nutrient agar. Suspicious colonies were picked to Kligler's iron agar and then identified by the same procedures used in the study of fecal specimens.

#### RESULTS

The relative incidence of the various *Shigella* types found in these cases is shown in Table 1. *Sh. sonnei* was by far the most prevalent organism and was isolated from 1,313, or approximately 62 per cent, of the patients. On the other hand, the so-called Flexner strains of dysentery bacilli (including those assigned to the doubtful types X and Y) were recovered in 706, or only one-third, of the cases. *Sh. dysenteriae* (Shiga) was not encountered and neither the Boyd group (types IX to XIV) nor the Sachs types were found with any frequency. It is interesting that *Sh. alkalescens* was recovered in an appreciable number of cases. Although the pathogenicity of this microorganism

\* The absorbed rabbit antisera employed for diagnostic purposes were supplied through the courtesy of Captain Charles V. Seastone, MC, Division of Bacteriology, Army Medical Center, Washington 12, D. C.

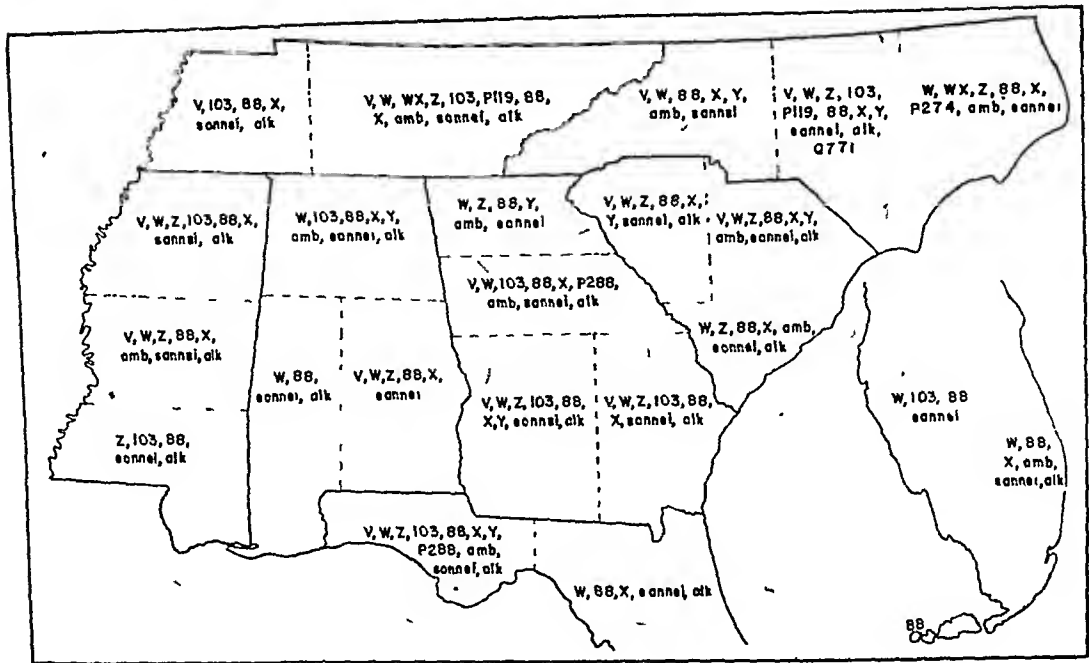


FIGURE 1

*Geographic Distribution of Shigella Types Isolated from Non-Epidemic Cases of Bacillary Dysentery in the Military Population of the Southeastern United States, 1943-1944*

V = Flexner I  
 W and WX = Flexner II  
 Z = Flexner III  
 103 = Flexner IV (Boyd 103)  
 P119 = Flexner V (Boyd P119)  
 88 = Flexner VI (Boyd 88—  
 Newcastle, Manchester)  
 X = X of Andrewes and Inman  
 (Probably not a valid type)

Y = Y of Andrewes and Inman  
 (Probably not a valid type)  
 P288 = Boyd II (Boyd P288)  
 P274 = Boyd P274  
 amb = *Sh. ambigua* (Schmitz)  
 sonnei = *Sh. sonnei*  
 alk = *Sh. alkalescens*  
 Q771 = Sachs type Q771

for man has often been doubted, the evidence available here indicates that *Sh. alkalescens* is not infrequently isolated from rather severe cases of dysentery.

The geographic distribution of the *Shigella* types recovered from endemic cases of bacillary dysentery in this series is shown in Figure 1. For convenience, the area comprising the Southeastern United States has been divided into 22 districts. The identity of the *Shigella* organisms isolated from the cases in each district is shown in the figure. Generally speaking, these data indicate that the *Shigella* types most frequently found in sporadic cases of dysentery were the ones which

also enjoyed the widest geographic dispersion.

#### COMMENT

The relative incidence of Flexner and Sonne bacilli found in this study differs considerably from that formerly observed in the United States.<sup>1-4</sup> The previous reports indicate that the Flexner organisms have been the predominant dysentery bacilli in this country, whereas in these cases *Sh. sonnei* was isolated almost twice as often as all other types combined. It is difficult to say whether or not such findings denote an actual shift in the prevalence of *Shigella* types. As suggested by Weil,<sup>8</sup> changes in the reported

incidence of various members of the *Shigella* group may be partly the result of improved methods of bacteriological diagnosis. This is particularly true in the case of late lactose fermenters such as Sonne bacilli. Nevertheless, the data presented here attest to the widespread occurrence of *Sh. sonnei* and to its importance as a cause of bacillary dysentery in the Southeastern United States.

The geographic distribution of the various *Shigella* types within this region is of some interest. As shown in Figure 1, *Sh. sonnei*, Flexner VI (Boyd 88-Newcastle-Manchester group), and Flexner II (W and WX) tend to be ubiquitous. The other Flexner bacilli, with the exception of type V (Boyd P119), are also well disseminated—as are *Sh. ambigua* (Schmitz) and *Sh. alcalescens*. The remaining members of the group were only rarely encountered and do not seem to be widely distributed in this area at the present time. The diversity of *Shigella* types found in some parts of the Southeastern states is also impressive. East Central Tennessee, the Florida Gulf Coast, and Central North Carolina seem to have been most fertile in this respect during 1943 and 1944.

#### SUMMARY

An analysis of the *Shigella* types iso-

lated from 2,119 sporadic or non-epidemic cases of bacillary dysentery in the military population of the Southeastern United States during 1943–1944 has been presented. The results show that *Sh. sonnei* was the organism most commonly recovered from these patients. The geographic distribution of the various *Shigella* types within this region was widespread. As might be expected, the varieties of dysentery bacilli most frequently isolated from the endemic cases were also the ones which exhibited the greatest geographic dissemination.

#### REFERENCES

1. McGinnes, G. F., McLean, A. L., Spindle, F., and Maxey, K. F. A Study of Diarrhea and Dysentery in Henrico County, Virginia. *Am. J. Hyg.*, 24:553, 1936.
2. Hardy, A. V., Watt, J., Kolodny, M. H., and DeCapito, T. Studies of the Acute Diarrheal Diseases. III. Infections Due to the "Newcastle Dysentery Bacillus." *A.J.P.H.*, 30:53, 1940.
3. Mayfield, C. R., and Gober, M. Comparative Efficiency of Plating Media for the Isolation of *Shigella Dysenteriae*. *A.J.P.H.*, 31:363, 1941.
4. Wheeler, K. M. Bacillary Dysentery. Connecticut State M. J., 8:419, 1944.
5. Hardy, A. V., Watt, J., and DeCapito, T. Studies of the Acute Diarrheal Diseases. XI. The Typing of *Shigella Dysenteriae* Flexner. *Pub. Health Rep.*, 58:696, 1943.
6. Wheeler, K. M. Serological Identification of Dysentery Bacilli. *A.J.P.H.*, 34:621, 1944.
7. Weil, A. J., Black, J., and Farsetta, K. The Serological Types of *Shigella Paradyenteriae* (Flexner). *J. Immunol.*, 49:321, 1944.
8. Weil, A. J. Progress in the Study of Bacillary Dysentery. *J. Immunol.*, 46:13, 1943.

#### A.P.H.A. MEMBERSHIP APPLICATION BLANK

Beginning with this issue of the *American Journal of Public Health*, an A.P.H.A. membership application blank will be carried every month in the advertising section. This time it is on page XXXIII.

# Incidence of Certain Biological Characteristics among "Food Poisoning" Staphylococci

HARRY A. FELDMAN, MAJOR, MC, AUS \*

THE final identification of a given staphylococcal strain as the causative agent of a food poisoning outbreak is usually dependent upon its ability to produce enterotoxin as measured by one of the cat tests.<sup>1, 2</sup> As a result of this requirement the large control laboratory is frequently faced with the dilemma of deciding upon how many of the staphylococcal colonies isolated from the materials submitted from a given outbreak are to be subjected to cat testing. This problem would be simplified if a reasonably accurate screening procedure were available.

Although Stritar and Jordan<sup>3</sup> have demonstrated that no one staphylococcus is responsible for food poisoning, it was considered that the results obtained by the use of a slightly different combination of tests in a series of 109 staphylococcal strains isolated from food poisoning material might be of interest. Twenty-two of the organisms were submitted as cultures; the remainder were isolated directly from food specimens which had been forwarded to this laboratory for study.

*Methods*—Following initial isolation (or purification) on tryptose agar, several staphylococcal colonies were selected from each plate for complete study. Pigmentary groupings were determined after cultivation on plain

and' blood (citrated horse or sheep) tryptose agar for a maximum period of 48 hours. Hemolytic properties were determined after incubation for 24 hours on the same blood agar medium. Coagulase activity was tested in a 1:4 dilution of human plasma as described by Chapman, *et al.*<sup>4</sup> Mannite fermentation was studied in peptone water containing 0.5 per cent mannite<sup>5</sup>; the maximum period of observation was 48 hours. The method of Dolman and coworkers as cited by Koser<sup>6</sup> was employed for the preparation of material for the enterotoxin test. When cats were available the intravenous method of Davison, Dack, and Cary<sup>1</sup> was employed, whereas when it was necessary to use young kittens the intraperitoneal method of Dolman, Wilson, and Cockcroft<sup>2</sup> was selected. The majority of the tests were performed by the intravenous cat method.

No enteric pathogens were isolated from any of the source materials used for this report.

*Data and Discussion*—The incidences of the various characteristics are summarized in Table 1. It will be noted that while 27 of 93 (29 per cent) strains tested yielded positive enterotoxin tests, 23 of these occurred among golden strains. Although only 9 of the organisms fermented mannite, 21 were hemolytic and 21 produced coagulase.

Table 2 concerns itself with a break-

\* With the technical assistance of Miss Jane Barnes

TABLE 1

*Characteristics of 109 Staphylococcal Strains from Food-Poisoning Outbreaks*

Pigment	Total	Hemolysin		Mannite		Coagulase		Enterotoxin	
		Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Golden	31	17	13	3	24	20	12	23	5
White	71	4	63	5	54	1	69	4	54
Yellow	7	0	7	1	6	0	7	0	7
Totals	109	21	83	9	84	21	88	27	66

TABLE 2

*Characteristics of the Enterotoxin Positive Staphylococcal Strains*

Pigment	Enterotoxin Pos.	Hemolysin		Mannite		Coagulase	
		Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Golden	23	14	9	3	19	18	5
White	4	0	4	0	3	0	4
Yellow	0	0	0	0	0	0	0
Totals	27	14	13	3	22	18	9

down of the enterotoxin positive strains. Seventy-eight per cent of the aureus strains were coagulase-positive and 61 per cent were hemolytic, but only 14 per cent fermented mannite. This is in contradistinction to the 4 albus enterotoxin producers in which none of these characteristics were demonstrable. While the two studies are not wholly comparable, these figures confirm Stritar and Jordan's<sup>3</sup> earlier findings, that if enterotoxin production is used as the criterion of food poisoning capability none of the other biological characteristics occurs with sufficient regularity to be pathognomonic of such ability. However, our data do suggest the generalization that golden, coagulase-positive, hemolytic staphylococci isolated from suspected food poisoning sources are likely to be enterotoxin producers; consequently, determination of these characteristics may be employed as a screening procedure in situations where animal testing must be conducted on a limited scale. Such screening can be undertaken only with the realization that a number of cat-positive specimens will be missed. In such situations it might be practical to seed all staphylococci isolated from a

single food (or all specimens) in one flask of the enterotoxin medium and then to use the common filtrate in a small group of animals.

TABLE 3

*Sources of Twenty-seven Enterotoxin Positive Staphylococcal Strains*

Source	Golden	White
Pudding	2	1
Cake	1	0
Rice	1	0
Vomit	7	0
Meat	1	0
Culture *	4	1
Meat Sandwich	0	2
Cocoa	1	0
Peas	1	0
Fish	2	0
Wieners	1	0
Unknown	2	0
Totals	23	4

\* Submitted in this form, food source unknown.

Table 3 indicates the various sources from which the enterotoxin strains were isolated. The group of vomitus specimens yielded rather surprising results. They all came from a single outbreak and had the same characteristics: hemolytic, coagulase-positive and mannite-negative. The organisms were isolated in almost pure culture so that this material suggests itself as a

potentially good source of the etiological agent of an outbreak. Two of the specimens also contained citreus colonies, but these were negative in all other respects.

#### SUMMARY AND CONCLUSIONS

1. Of 109 strains of staphylococci isolated from foods and human vomitus during bacteriologic studies of food poisoning outbreaks, 27 strains produced enterotoxin as measured by one of the cat tests. Twenty-three of the 27 were classified as *Staph. aureus* and 4 as *Staph. albus*. Of the *Staph. aureus* strains 78 per cent were coagulase-positive and 61 per cent hemolytic, while 14 per cent fermented mannite. The *Staph. albus* group had none of these characteristics.

2. Those staphylococcal strains which produced coagulase, hemolysin, and golden pigment were more likely to produce enterotoxin, but this combination of characteristics did not occur with sufficient regularity to replace the cat test.

3. Seven enterotoxin positive strains were isolated from human vomitus while the remaining 20 came from a multiplicity of foods.

4. Under the conditions of this study mannite fermentation appears to be a poor, unreliable indicator of potential enterotoxin production by staphylococci.

#### REFERENCES

1. Davison, E., Dack, G. M., and Cary, W. E. Attempts to Assay the Enterotoxin Substance Produced by Staphylococci by Parenteral Injection of Monkeys and Kittens. *J. Infect. Dis.*, 62:219-23, 1938.
2. Dolman, C. E., Wilson, R. J., and Cockcroft, W. H. A New Method of Detecting Staphylococcus Enterotoxin. *Canad. Pub. Health J.*, 27:489-93, 1936.
3. Stritar, J., and Jordan, E. O. Is a Special Variety of Staphylococcus Concerned in Food Poisoning? *J. Infect. Dis.*, 56:1-7, 1935.
4. Chapman, G. H., Berens, C., and Stiles, M. H. The Coagulation of Plasma by Staphylococci. *J. Bact.*, 41:431-40, 1941.
5. Hitchens, A. P. "Culture Media," in American Public Health Association. *Diagnostic Procedures and Reagents* (First Edition), New York, N. Y., 1941, p. 10.
6. Koser, S. A. "Bacterial Food Poisoning," in American Public Health Association. *Diagnostic Procedures and Reagents* (First Edition), New York, N. Y., 1941, p. 214.

## Hawaii Adopts Bread and Flour Enrichment Program

The Legislature of the Territory of Hawaii, according to Dr. C. L. Wilbar, Jr., the President of the Board of Health, at its last session, passed an act requiring the enrichment of bread and flour, which became effective May 8, 1945.

This act makes it unlawful for any person to manufacture, mix, compound, sell or offer for sale flour, white bread, or rolls for human consumption in the Territory unless they contain standard amounts of thiamine, riboflavin,

niacin or niacin-amide and iron. The standards embodied in this legislation are in accord with those recommended by the Food and Nutrition Board of the National Research Council and the Federal Security Agency, with the exception that the Council's optional standard for vitamin D was not adopted. However, a minimum of 500 milligrams and a maximum of 1,500 milligrams of calcium per pound have been adopted for enriched self-rising flour.



# A New Statement of School Health Policies

CHARLES C. WILSON, M.D., F.A.P.H.A.

*Chairman, National Committee on School Health Policies; and Professor of Health and Physical Education, Teachers College, Columbia University, New York, N. Y.*

A HEALTHIER America waits upon and depends upon the universal adoption of sound school health policies. The National Committee on School Health Policies, formed in 1945 by the National Conference for Co-operation in Health Education, faced squarely the problem of stating definitely and clearly policies under which school health programs might be maintained and improved in thousands of different school situations. The broad scope of its conclusions and suggestions can be gleaned from the range of the committee's recommendations. It is recommended that all schools:

"Organize a school health council;

"Make provision for healthier school living by raising their standards of inspection for safety and sanitation, by employing more understanding and emotionally stable teachers, by paying more attention to the health of school personnel, and even by serving better food;

"Improve the quality of health and safety instruction by according more time, securing better-qualified teachers, granting more scholastic credit and providing more adequate teaching materials;

"Clarify and sharpen their programs for the prevention and control of communicable diseases and avoidable accidents;

"Institute wider programs of health counseling, including keener teacher observation, more frequent screening tests, and more useful medical and psychological examinations;

"Enforce more intelligent precautions in physical education and athletic programs;

"Identify sooner and provide more sensibly for handicapped children;

"Provide in-service education to help teachers to understand the health problems of children;

"Participate in programs of parent and community health education; and

"Seek qualified medical advisors, nurses, health educators, and other necessary specialized health personnel."

While these recommendations represent current thinking, the idea of a statement of school health policies is not new. More than five years ago the Maternal and Child Health Section of the American Public Health Association appointed a committee\* to prepare a statement of school health policies. Following the preparation of a preliminary report, that committee suggested that its report be submitted to a number of other groups concerned with school health programs. This suggestion was approved and acted upon. These other groups suggested changes and improvements which were incorporated into the preliminary material, and the final report was published in 1940 under the name of eight different national organizations. It was widely used as a guide and for discussion purposes.

Now a 1945 revision of *Suggested*

\* Members of that committee were Harold H. Mitchell, M.D., Mary E. Chayer, R.N., and Charles C. Wilson, M.D.

*School Health Policies* is available\* for guidance of all concerned with school health programs. Although based on the original report, the present edition has been so completely rewritten and rearranged that it is practically a new statement.

Like its predecessor, the 1945 edition of *Suggested School Health Policies* was produced by the coöperative efforts of representatives of many professional groups; it is an integration of the viewpoints of educators, physicians, nurses, and public health specialists. The following is a list of those who worked diligently in preparing the 1945 edition, together with the names of the organizations which nominated them:

- W. E. Ayling, M.D., American School Health Association
- W. W. Bauer, M.D., American Medical Association
- Edward S. Evenden, Ph.D., American Association of Teachers Colleges
- Raymond A. Green, M.A., Secondary School Principals Association
- W. H. Lemmel, Ed.D., American Association of School Administrators
- S. S. Lifson, M.A., U. S. Public Health Service
- Ben Miller, Ph.D., American Association for Health, Physical Education and Recreation
- Harold H. Mitchell, M.D., American Academy of Pediatrics
- Dorothy Nyswander, Ph.D., American Public Health Association
- Thurman B. Rice, M.D., Joint Committee on Health Problems in Education of the N.E.A. and A.M.A.
- Justus J. Schifferers, Health Education Council, New York (*Secretary*)
- Maycie Southall, Ph.D., Educational Policies Commission
- Frank Stafford, M.A., U. S. Office of Education
- George M. Wheatley, M.D., U. S. Children's Bureau
- Alberta B. Wilson, R.N., National Organization for Public Health Nursing
- Charles C. Wilson, M.D. (*Chairman*)
- J. M. Wisan, D.D.S., American Dental Association

Upon the Secretary of the committee, Justus J. Schifferers, fell the responsi-

bility for arranging and editing the report. It was my privilege to act as Chairman of the committee.

*Suggested School Health Policies* recognizes fully that the efforts of health departments and education departments, as well as all other community groups, must be closely coordinated in order that the benefits of modern knowledge of health and of disease prevention may be extended to all children. It suggests that a health committee or health council be organized in each school and each school system and that such groups participate in community health councils. It suggests that all community resources be made available to meet the health needs of students, and that community planning should, if necessary, lead to the development of additional resources.

The suggested policies regarding health and safety instruction recognize the important changes in this part of the school curriculum, particularly at the secondary school level where specific health courses are recommended. Health courses should be taught by teachers with special preparation and certification in health education. A variety of teaching methods should be used.

The section of the report dealing with Services for Health Protection and Improvement suggests policies relating to the care of emergencies, the prevention and control of communicable disease, and health counseling. Health counseling is described as "the planned coöperative effort on the part of teachers, nurses, physicians, psychologists, dentists, and others to discover the health needs and health problems of students and to help them and their families find ways of meeting the needs and solving the problems." Specific suggestions are offered regarding the determination of health needs and problems; the interpretation of these needs to students, parents, and teachers; and

\* Reprints of the complete report can be obtained from the American Public Health Association (25¢).

to meeting the needs through community resources.

That education is for *all* children is one viewpoint expressed in the policies report. Recommendations are made for the care and education of both physically and mentally handicapped pupils.

As significant as any policy it proposes is the demonstration by the National Committee on School Health Policies that there are no insurmountable barriers to the coöperative efforts of different professional groups. The committee agreed unanimously on the

policies suggested. A spirit of friendly coöperation and of mutual interest prevailed at all times. This type of interprofessional coöperation may well be fostered by state and local groups interested in protecting and improving the health of children.

Members of the National Committee on School Health Policies hope that its report will be used for discussion by numerous groups interested in the health of school children, and that each of the national organizations represented on the committee will in time officially approve the report.

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## THE LIFE BLOOD

IN an earlier issue of the *Journal*,<sup>1</sup> we have discussed the possibilities of the use of gamma globulin in the control of measles. Gamma globulin is, however, but one of many important elements in the marvellously adjusted fluid which flows out through the arteries to all the tissues of the body. The ancients were not far wrong in visualizing the heart as a symbol of the force which drives the human organism and the blood as the very essence of human life.

For this number of the *Journal*, we have asked Dr. C. A. Janeway to prepare a comprehensive review of the broad outlines of the subject of the "Blood and Blood Derivatives"—a topic which has been brought for the first time into the field of concrete, large-scale, application by the experiences of the war. Dr. Janeway surveys the wide possibilities of the use of whole blood, of resuspended red cells, of plasma, of fibrinogen and thrombin products, of gamma globulin, of isohemagglutinins, of serum albumin, and other fractions of plasma in the prevention and the treatment of disease. He points out the hazards to be avoided from transmission of syphilis and malaria, and serum jaundice, from the presence of antigens and antianaphylactic bodies and from the Rh factor.

Above all, he emphasizes the fact that the processes of procurement, processing, and distribution of blood and blood derivatives involve administrative problems of major magnitude. He cites the progress made in Michigan and North Dakota and the plans of Massachusetts. Whatever rôle may be played in different localities by the American Red Cross, the local hospital and the state or local health department, the problem is clearly one which, as the lawyers say, "is vested with the public interest." The health officer represents that public interest, and this review should be of the greatest value to him in dealing with what Dr. Janeway rightly describes as "A New Public Health Field."

## REFERENCE

1. Editorial. Gamma Globulin for Measles. *A.J.P.H.*, 35, 7:732 (July), 1945.

## A LAWYER SPEAKS TO DOCTORS

ON November 19, 1945, President Truman delivered to Congress a message on a national health program which marks an important milestone on the long road toward public health. It includes the five basic elements which have entered into all informed discussions of this subject: provision of hospitals and related facilities for areas now lacking service of this kind; expansion of public health services, particularly those related to maternity and infancy; advancement of medical education and research; a comprehensive plan of prepayment for medical care; and extension of social security to cover the hazards of sickness and disability. It is a bold and statesmanlike document—a clarion call to action.

The exact form of legislation to carry out these purposes will come before the Congress and the people during succeeding months. Discussions of details must await their concrete formulations. As a preparation for reasonable discussion, we urge preliminary study of an article presented in *Public Health Reports* for January 5, 1945. If your volume has not been bound as yet, dig this number out of your files. Take it with you on a train or in a bus and read an address by Wendell Berge, Assistant Attorney General of the United States on "Justice and the Future of Medicine," delivered before the American Urological Association. It is one of the clearest and fairest analyses of the basic principles which should govern our planning for medical care which have yet appeared in print.

Mr. Berge makes three points of major importance. The first of these is his emphasis on the fact that medical service as an actuality involves social and economic as well as medical factors. He recognizes that this problem is "unusually baffling. For it is only the exceptional person who has experienced all the arts—technical, economic, cultural—which converge in it. A beginning of understanding lies in a recognition of a distinction between the technology of medicine and its organization. By technology I mean all of those arts of diagnosis, therapeutics, surgery, radiology, dentistry, and the like, which constitute the profession of medicine. By organization I mean all of the arrangements, social and economic, by which medical service is made available. It is idle to dispute as to which is the more important; for there must be a medicine to practice, and there must be arrangements for bringing physician and patient together. It is no veiled mystery as to which is the more backward. In the advance of the art of medicine, you have done a brilliant job. In the face of this advance it is all the more tragic that progress in the organization of medicine has lagged and, because of this lag, the nation has not had the full benefit of your superlative performance."

With regard to the problems of organization of medical service—as distinct from the practice of the medical arts—Mr. Berge points out that "as a group, physicians have been little exposed to the discipline of the social sciences, and social organization is as intricate and as full of mysteries as the art of medicine itself. So when I hear a physician speaking about the organization of medicine in a tone of doctrinaire finality, I cannot fail to remark the contrast with the courageous and humble search for truth displayed in his own work. And when I hear the question put as a choice between private practice and socialized medicine, I cannot escape noting a confusion and dogmatism strikingly different from the scientific approach. As for the 'either or' of private practice and

socialized medicine, there is no such question. There are a myriad of schemes under which the doctor and the patient may be brought together—not a choice between just two.” There is “no such question as private practice versus socialized medicine. For practice is never private and all medicine has a social function.”

Mr. Berge deals effectively with the claim that no other system than individual financially-competitive medical service can safeguard quality of medical care, an essentially intimate personal relation between physician and patient and the morale and initiative of the physician. “Such values,” he says, “depend upon no one single way of organizing medicine. To say that a doctor will give his utmost if he acts as his own business agent, and that his incentive will be stifled if he receives a salary, is not borne out by experience. The time was when the great scientific advance was the work of the solo inventor. Today the most creative of all work, the progress of science and the useful arts, is the product of men on salary. In the larger offices the great mass of lawyers now work on salary and work as hard and as heroically as the youngster who used to flaunt his own shingle in the breeze. It is true that the chance to become a partner is an incentive, but I would not rank it overly high, for work equally as good is done by the lawyers in the Government, where no such opportunity exists. In our institutions of higher learning, research as well as teaching falls to salaried employees and there you will observe an interest, excitement, devotion to duty, an urge to be up and doing. To return to medicine, how many thousands of our best doctors are today giving their all without stint in the service of the Army and the Navy?

“Ambition, security, income are necessary things. They have in every age and among the most varied conditions of society driven men to accomplishment. If I were a youngster, I would rather leave the series of judgments which shape my career to men of my own profession than attempt to get ahead by translating my skills into the art of winning and holding patients.”

Mr. Berge's third emphasis is on the inevitability of changes in the present system of medical services and on the importance of medical participation in planning such changes. “The arts of medicine,” he tells us “have advanced; the importance of medicine has been enhanced; it has become a necessity to the people and an essential in the operation of the industrial system. It has outgrown the organization into which, in days of petty trade, it was cast. The demand is for a vaster, more comprehensive, more reliable medical service. If an instrument of the common health can be provided on terms the people can afford, the people will rejoice. If you do not help them to do it, the people will seize upon whatever agencies are at hand as a help in time of need, for the universal demand that the common health be served cannot much longer be stayed.

“A new medical order is inevitable. Whether we shall cling to the old order or create a new one is not the question. The swift course of events has decreed that there can be no turning back. The question is rather what sort of a medical order it is going to be and whether it is the best which wisdom and knowledge can contrive. Like every promising venture, it has its hazards. Is it to be shaped by the best understanding which law, medicine, and the social studies can bring to it? Or is it to be constructed by amateurs in ignorance but with good intentions?”

He makes the following final plea to the medical profession: “I can hand you no ready-made medical order on a silver platter. If I could, it would do you

no good. I can only suggest to you, whose minds have long been busied with the subject, some reflections of a man of another profession. And I am positive that a service adequate to the times cannot be brought into being without the doctors' creative participation. As doctors and patients we face a crisis, and my appeal is to the ancient wisdom of the profession. The ends of medicine remain unchanged; ways and means must be found to adapt its practice to the conditions of present-day society. A new organization must be created that an ancient mission be not lost, that once again medicine shall be available to all in need and charges shall be graduated in accordance with ability to pay.

"An instrument of the common health such as never before has been offered to a people is within our reach. This is no time for petty doubts and timid moves. In the face of a national challenge we must, as one of our great jurists said of the law, let our minds be bold."

### SAFE AT HOME?

**H**OME accidents represent the ninth most important cause of deaths in the United States. During the past five years more than 150,000 persons have died as a result of such accidents. The number of these deaths annually in this period has varied from a low of 30,000 in 1941 to a high of 33,500 in 1943.

The present indications are that there will be no marked change in the number of home accident fatalities this year. The National Safety Council estimates that there were 23,300 such deaths during the first nine months of 1945 as compared with 23,000 for the same period for 1944, an increase of approximately 1 per cent.

Although reliable home accident morbidity figures are not available because of the absence of any required reporting procedure, it is reasonable to suppose that the frequency of non-fatal disabling injuries, estimated at 4,800,000 in 1944, follows the same general pattern indicated by mortality figures.

Viewed in relation to its effect on the nation's mortality and morbidity experience, the prevention of home accidents can therefore be considered as one of our major public health problems as pointed out by W. Graham Cole at the December meeting of the Public Health Association of New York City.\* It is a problem which requires careful fundamental study and the development of effective control procedures. Most home accidents are preventable, but procedures for their control must contemplate not only the correction of environmental conditions but a change in individual attitudes and the development of safe habits and behavior characteristics.

The responsibility for leadership in developing and applying control procedures for the prevention of home accidents rests largely in the public health field and upon the official public health agency. It is important, therefore, that the American Public Health Association through its Committee on Administrative Practice has set up a Subcommittee on Accident Prevention. As a preliminary step this subcommittee undertook a study of home safety activities conducted on the state level. Based on this study, a summary of the state-wide safety activities being conducted in New York, Minnesota, New Jersey, Illinois, and Kansas, was prepared and printed in the January, 1944, issue of "The Spotlight." Subse-

\* To be published

quently the subcommittee developed a general program statement entitled "Accident Prevention—An Essential Public Health Service" and an outline, "Suggested Home Safety Activities—For Consideration of Local Health Departments." This material was printed in the March, 1945, issue of the *American Journal of Public Health*. Reprints of it, together with copies of a leaflet entitled "Get the Facts about Accidents," prepared by the National Safety Council, have been distributed to state, county, and city health departments.

The subcommittee in its program statement calls attention to the seriousness of the entire accident problem, pointing out that all types of accidents taken together represent the fifth cause of death in the United States. The subcommittee recognizes the vital part that organized accident prevention activities has played in the prevention of industrial, traffic, and other public accidents. It notes, however, that insufficient organized attention has been given to the prevention of home accidents, and states its belief that this latter field represents one of the major untilled fields of public health.

Of considerable significance is the fact that the program recommended by the Committee on Accident Prevention was published within a few months of the publication of the preliminary reports developed by the A.P.H.A. Committee on Hygiene of Housing. There is a definite correlation of interest between these two projects. Although statistics indicate that not all home accidents can be charged to improper environment, many home accidents do occur as a result of unfavorable housing conditions. Local studies in the field of hygiene of housing and in the field of home safety can be correlated effectively.

That home accident prevention is receiving increased recognition in the public health field is evidenced by the responses from several health officers who have commented on the subcommittee's program.

For example, the Health Department of Madison, Wis., publishes a pamphlet *Accidental Deaths*, which is a well annotated statistical review of the problem as it affects the City of Madison. The Health Officer indicates that he is fully appreciative of the fact that home accidents constitute a public health problem, and has established a program which includes the distribution of material on the subject.

The Health Officer of Pasadena, Calif., writes that his Department is actively interested in incorporating home accident prevention work in its program and has published a pamphlet which develops the theme, "Accident Prevention and Public Health."

The Health Officer of Omaha, Nebr., indicates his Department's willingness to cooperate in home accident prevention activities, and the Bureau of Vital Statistics of the Honolulu Board of Health advises that a Committee on Accident Prevention has been organized by the board.

It is interesting to note that one of the most active areas for home accident prevention programs is in Chattanooga, Tenn. The Tennessee Valley Authority states that its activities include a home accident survey in city schools. An analysis of these accidents is made on a district basis. The information is posted in schools so that each school may know the accident experience in its particular district. A recording system has been developed and is being operated by the Junior Red Cross in conjunction with the school systems. Home Accident courses are being conducted in the community, and the Junior courses are given in connection with the school curriculum. A series of leaflets on home safety has been distributed among T.V.A. employees.



As an aid in coördinating existing effective home safety activities of health agencies and other groups, and to stimulate the conduct of additional activities in this field, the National Safety Council and the American Red Cross, with the coöperation of the American Public Health Association and other agencies, is developing a nation-wide home safety educational program.

The prevention of home accidents represents a responsibility and an opportunity for state, county, and city health departments, as well as for nonofficial health agencies interested in the reduction of mortality and morbidity. Experience is showing that effective activities can be developed to meet this responsibility and to render an additional and necessary public health service, in coöperation with associated community safety organizations.

#### EMPLOYMENT AND PLACEMENT SERVICE

The American Public Health Association announces an expansion of the Employment Service which has become a Counseling and Placement Service for public health workers and employers. This project which is primarily for the service of veterans has been made possible through the coöperation of the United States Public Health Service.

Counseling and guidance services for the various public health specialties are available to candidates through well trained staff consultants. Besides this function the Counseling and Placement Service establishes lines of contact between employers and candidates. It thus serves as a clearing house without recommending or sponsoring candidates or positions.

The facilities of the employment page are open to members free of charge.

## Credit Lines

### A PROUD RECORD

The *Journal* has had occasions to mark several anniversaries of late but there is none of which it is prouder than the twenty year record of Raymond S. Patterson as editor, compiler, judge, analyst and commentator of the department known (at present) as "A Selected Public Health Bibliography with Annotations."

From the welter of published material dealing with health, probably some million words yearly, Dr. Patterson culls each month some dozen or more items worthy of note, highlights them with provocative headings, and in a few lines pins down something about the report, leaflet, or article which makes it worth reading. The technique is so airy, gossipy, and casual, one forgets the extremely careful and thoughtful reading, backed by a wide knowledge of the health field, on which the selections are based. The department is unique; the needling of the reader's interest is expert, painless, even pleasant. To remember that this is the work of one individual is remarkable testimony to Dr. Patterson's catholicity of interest, rare judgment, and skillful pen. The first two decades were the hardest, Dr. Patterson. Your grateful readers know how smoothly you will handle the products of the next twenty!

### WHO ARE THE VOCAL ANTIVIVISECTIONISTS?

Dr. Paul B. Brooks in his column, "Dr. Jones Says," in the November 12 and 19, 1945, *Health News* of the New York State Department of Health, philosophizes on the current antivivisectionist revival thus:

Well, the "antivivisectionists"—from the barrage of propaganda that's been coming

over recently, it looks like they're getting ready for another "break-through" attempt when the Legislature meets again: to get a law prohibiting the use of dogs for scientific experiments. It's hard for most people to realize but, if I'm any judge, that represents a greater threat to human welfare, health and safety than the break-through the Germans made over there in Belgium last December.

Being a "dog lover" myself I can understand their reactions. They're crusading—most of 'em—because they've got 'emselfes worked up to a point where, to them, the comfort and happiness of dogs is the most important thing in the world. A few of 'em, of course—they're doing it because they're well paid for it. And I've got a feeling they're the ones, principally, that're keeping this movement going. I can understand that too: wanting to keep a good job. . . .

Most any of 'em, though, if they got sick themselves, I'll gamble they wouldn't call an "antivivisectionist" doctor (and there are a few of 'em, around the country). They'd want one that used his head—not his emotions. And what they had—if it happened to be diabetes, we'll say, and insulin'd save their lives, the fact that they had to use dogs in developing it—that wouldn't worry 'em any. Their lives'd be worth more to 'em than the lives of any number of dogs. Other people's lives—maybe that's different. . . .

\* \* \* \* \*

We were speaking, here recently, about the "antivivisectionists": the probability they'd try again to get a bill through prohibiting the use of dogs for scientific experiments. They've been trying for years but the legislature, when it came to people versus pups, they've always put human life and health first. But these aggressive minorities—they're usually well organized for putting on pressure and the legislature—well, if there was equally effective pressure on the other side, at least it'd relieve the strain.

But one trouble in the past, the opposition to this stuff—it's been, mostly, the doctors and other scientific people. They've pointed out what a setback it'd be to medical science if the use of dogs was prohibited. But it's been the human side of it they've stressed. And I suspect the general impression may have been that dog owner's as a whole, favored the prohibition.

But when you stop to think of it "dog owners, as a whole" ought to be right up in the front line, opposing that kind of legislation. The good canines—pets, hunters, workers, show-dogs they're benefiting from experiments made on dogs, the same as the humans are.

Canine distemper—I s'pose that's probably killed more dogs than any other disease. Today most of the valuable dogs are protected against it by vaccination. It was by experimental work with dogs that the vaccine was developed. Rabies—the worst disease a dog can have and one he's liable to be exposed to: the vaccine that protects against that is the result of experiments on dogs.

"Black tongue" (the same as pellagra in humans) feeding experiments on dogs that had it led to the discovery of its cause and cure in dogs and humans, both. It was a matter of supplying a vitamin they lacked. And the prepared dog-foods—what the dog needs for his nutrition—it's been determined by experimenting with dogs.

Yes, sir. As the owner of a pedigreed dog and a contributing member of a humane society, I'm opposed to any legislation that's against the interests of dogs "as a whole"—to say nothing of humans.

#### WELCOME TO "CANADA'S HEALTH & WELFARE"

The October, 1945, number of *Canada's Health & Welfare* is Vol. 1, No. 1 of this new monthly Bulletin of the Canadian Department of National Health and Welfare. Aside from its general information on health and welfare matters in Canada, it has monthly Personality Sketches, Global Report, and Book Review columns. In the first issue Dr. John T. Phair, Deputy Minister of Health and Hospitals for the Province of Ontario and Charter Fellow of the A.P.H.A., is the subject of the personality sketch; in the second issue Dr. Haven Emerson's *Local Health Units for the National* has the lead review. The two global report columns discuss respectively the United Kingdom Family Allowances Act and The First Ten Years of the United States Social Security Act. Our congratulations to the Honorable Brooke Claxton, the Minister of National

Health and Welfare, and his staff on these first issues and their "one world" character.

#### GROWING OLD GRACEFULLY

It's an old story that by 1950 the United States will have 50,000,000 oldsters of over 45. Two items from widely separated parts of the country suggest a growing awareness of the changes this development is making in social and health programs. The Welfare Federation of Cleveland in mid-November opened a month long exhibition entitled "Live Long and Like It" in the Cleveland Health Museum. Intriguing subtitles are, "The Four B's—Baldness, Bifocals, Bridges, and Bulges" and "How Grandma Helped on the Home Front." A special feature of the exhibit was "The Golden Age Hobby Show."

The other item comes from Cooper Union in New York. This fine old College of the people announced for the current winter season a series of lectures on Aging Successfully, by George Lawton, the Director of the Old Age Counselling Bureau. Although designed primarily "for those in the later maturity age range," even the young are invited to get an understanding of parents, grandparents, and older business associates who are often their bosses. "You Can Teach an Old Dog New Tricks," and "Grandma Made Johnny Delinquent," are among the lecture titles.

#### SPECIAL EXHIBIT AT YALE MEDICAL LIBRARY

Credit Lines is indebted to *Science* of September 21, 1945, for the following: "The Yale Medical Library has now on display a special exhibit arranged in recognition of the distinguished services of Dr. Charles-Edward Amory Winslow, senior member of the faculty of the Yale School of Medicine, who retired at the end of June. Since Dr.

Winslow has for many years conducted séminars on the history of personal hygiene and the public health movement, the first part of the exhibit is devoted to early writings on hygiene, beginning with Galen and his concept of the 'Non-Naturals' in relation to health. Five display cases are devoted to Dr. Winslow's writings. His contributions to the historical and biographical phases of the public health movement occupy a separate display case. His latest monograph, entitled 'The Conquest of Epidemic Disease,' and a selection of his many monographs and papers on ventilation and air conditioning are displayed. The first volumes of the *Journal of Bacteriology* and the *American Journal of Public Health*, of which Dr. Winslow has been editor, the first since its inception in 1916, and the other since April, 1944, are also on view."

#### NEWS IN NOISE CONTROL

The October 15 *News Bulletin* of the National Noise Abatement Council announces 1945 Achievement Award plaques to five cities for outstanding civic accomplishment in the abatement of needless noise: Chicago among cities with populations of 500,000 or more; Rochester, N. Y., among those of 250,000 to 500,000 population; Salt Lake City, among those of 100,000 to \$250,000; Little Rock, among those under 100,000; and Memphis, the Grand National Award Winner. With this issue of the *Bulletin* was enclosed a reprint from the *American Journal of Public Health* of March, 1944, on "The Problem of Industrial Noise" by Paul E. Sabine, Director, Riverbank Laboratories, Geneva, Ill.

#### INDUSTRIAL HYGIENE INSTITUTE IN DETROIT

The Detroit Industrial Safety Council sends us the program of its two day Institute on Industrial Health, Hygiene,

and Nursing held in November, 1945, with the coöperation of both the Michigan and Detroit Health Departments, the Michigan and Wayne County Medical Societies, as well as the Michigan Association of Industrial Physicians and Surgeons, the Michigan Industrial Hygiene Association, and the Detroit Industrial Nurses Association. Speakers included various technical experts from both state and city departments, the University of Michigan School of Public Health, and other universities, as well as physicians, nurses, and engineers from the industrial plants of Detroit.

#### WELCOME TO "THE PUBLIC AND EDUCATION"

The National Education Association sends us No. 1, Vol. 1, of *The Public and Education* whose purpose is "to present directly to influential leaders in all phases of American life significant information concerning the rôle of education in our country." This first issue is a four page leaflet well printed and interestingly illustrated. The publication may be secured free of charge from the National Education Association, 1201 Sixteenth St., N.W., Washington 6, D. C.

#### WISCONSIN COÖPERATIVE SCHOOL HEALTH PROGRAM

One of the briefest and best descriptions of a school health program designed to integrate school health with the whole school curriculum, appears in the annual report (1944-1945) to the W. K. Kellogg Foundation of the Wisconsin State Department of Public Instruction, State Board of Health, and coöperating agencies. The report summarizes the progress of the Wisconsin Coöperative School Health Program. We quote: To include in every school provision for

1. Adequate health instruction at each grade level;

2. A healthful physical, mental, emotional and social school environment;
3. Health services to determine the health status of each child at certain intervals, to adjust the school program of the child to meet his needs, and, if possible, to seek correction of remediable defects through the family physician and dentist;
4. Prevention and control of disease among school children;
5. Prevention of accidents and care of emergency conditions at school;
6. Special education for handicapped children;
7. Inservice training and supervision of teachers; and
8. Interpretation of the school health program to the home.

The whole report, with the year's accomplishments made possible by an unusual number of cooperating agencies, is well worth reading. Copies are obtainable from the State Department of Public Instruction, Madison, Wis.

#### AN ENTERPRISING NEWS LETTER FROM GEORGIA

A *News Letter* sponsored by the Engineering Section of the Georgia Public Health Association has completed its first year with Volume 1, No. 5. This is a well written and very newsy sheet digesting the activities and interests of those in environmental sanitation in Georgia and largely made up of personals which must serve to develop an *esprit d'corps*. The Secretary of the Georgia Public Health Association is Louva G. Lenert of the State Department of Health, Atlanta 3, Ga.

#### "THE WELFARE POST" OF MISSOURI

Inspired by the new Missouri Constitution that will go into effect in 1946, the Missouri Welfare League, whose purposes are "prevention of delinquency and reduction of crime" publishes *The Welfare Post* in Springfield, Mo. The September, 1945, issue, Vol. 1, No. 1, deals with a variety of health and welfare problems of the state and describes several of Springfield's colleges

and other social agencies. It also summarizes the six lectures on "State Health and Welfare Organization under the Missouri Constitution," given last winter under the auspices of the Washington University School of Social Work and the Missouri Association for Social Welfare, as well as other citizen activities leading to the formation of a plan for the new Department of Health and Welfare designed to give the best possible service in the field of public health, public welfare, mental hygiene, and corrections. The new Constitution writes a joint health and welfare department into the law of the state.

#### TWO REPORTS ON COMMUNITY SERVICES

Lining up home town resources for better living, including intelligent service to the veteran, is the subject of two brief reports appearing almost simultaneously from a group of knowledgeable persons.

*The Home Town Job*—a report on community services for veterans by the National Committee on Service to Veterans, under the auspices of the National Social Work Council, summarizes what home towns are doing for veterans and how to get the job done right. It is an informative, clear-cut statement, emphasizing skilled leadership and cooperative effort as essentials to success. The successful program of several cities is described.

*The Road to Community Reorganization* tackles home town problems on a wider front, "the community."

The recommendations of this report are worth careful study, especially those that relate to the establishment of a new federal department headed by a Cabinet secretary, and might well be a subject for discussion at the same meeting at which the Gunn-Platt report on *Voluntary Health Agencies* is reviewed. Copies of the former report are available from the National Social Work

Council, 1790 Broadway, New York 19, N. Y., 10 cents each; 6 cents plus postage for 100 or more copies.

The second report may be secured without charge from the Woman's Foundation, 10 East 40th Street, New York 16, N. Y.

"CHALLENGE TO COMMUNITY ACTION"

From the Social Protection Division, Office of Community War Services in the Federal Security Agency in Washington 25, D. C., comes a 76 page booklet—*Challenge to Community Action*. This is the record of five years' progress in social protection and the lessons learned in some 1,900 communities leading to a pattern for action in the control of venereal disease infec-

tions. It should be read by every health worker, for three good reasons: it supplies the most recent information about the weapons with which we fight venereal disease—the drugs, law, education and social treatment; it gives the most approved line of attack—our battle strategy as it were, through the use of community agencies, and it tells where to get reinforcements in a generous list of interested national agencies, books, leaflets, reprints, films, and posters. "The problems," states this booklet, "are bigger than they were in 1919, but we are much better prepared to face them"—thanks in part to this utterly frank and thorough analysis of the strength of our enemy.

*Copies are free.*

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.*

*All books reviewed in these columns may be purchased through the Book Service.*

**Injury and Death of Bacteria by Chemical Agents—***By Otto Rahm. Normandy, Mo.: Biodynamica, 1945. 183 pp. Price, \$3.60.*

The author presents a very interesting discussion on survivor curves of unicellular and multicellular organisms. Explanations of the differences of the curves are presented by presentation of survivor curves of various multicellular and unicellular organisms. The author claims that the difference in the order of death is due to the fact that, in the case of bacteria, when one cell dies, the individual is dead, whereas in the multicellular organism the death of one cell does not necessarily cause death.

A very excellent presentation of the mode of action of disinfectants and antiseptics is given. The limitations of the F.D.A. method of testing disinfectants are discussed, together with other suggested methods. A new method of testing is suggested.

The author has brought together scattered facts about disinfectants and antiseptics which will aid considerably in lessening the confusion that exists in this important field.

W. L. MALLMANN

**An Experiment in the Psychiatric Treatment of Promiscuous Girls—***By Ernest G. Lyon, M.D., Helen M. Jambor, Hazel G. Corrigan and Katharine P. Bradway, Ph.D. San Francisco: San Francisco Dept. of Public Health, 1945. 68 pp. Free to subscribers of the U. S. Public Health Service Journal.*

Those who have awaited with interest

the reports from the San Francisco project coöperatively set up through federal, state, and city auspices, and with the active coöperation of state and local voluntary agencies, will want to read this report of the experience relating to promiscuity among 365 girls and women.

This study confirms the opinion that promiscuity "is individually motivated and can be understood and treated only on an individual basis."

The authors believe that psychiatric facilities may be used fruitfully in connection with a venereal disease clinic to decrease or eliminate promiscuity among a selected group who voluntarily make use of treatment service.

REGINALD M. ATWATER

**The Nurse and the Law—***By Gene Harrison, A.B., R.N. Philadelphia: Davis, 1945. 353 pp. Price, \$3.00.*

"The nurse cannot be a lawyer any more than she can be a doctor . . . However, just as she is obligated to know many things the application of which is the prerogative of the physician, just so may the well prepared nurse be expected to know many things the application of which belongs to the lawyer and the Court."

Public health nurses would not take exception to the words of Dr. L. E. Dickson who writes the introduction to this book, and they will welcome the chapter written especially for them (Chapter XIII). To many nurses the state laws as they affect them directly, are unfamiliar. They are aware of the

professional and ethical obligations of their practice, but what the law permits them to do, or how the law may place the blame on them for an act they assumed was authorized by a physician, are matters needing a great deal more study than most nurses have given them.

Problems of special interest to public health nurses discussed in this chapter are: standing orders from state and county health departments and in private agencies; parents' refusal to provide care for their sick child; breaking of quarantine; responsibility for reporting communicable disease; medical supervision of the sick; legal status of the medical supervisor; industrial nursing responsibilities; legal aspects of the control of tuberculosis and venereal disease; premarital examinations; prenatal tests; vital statistics; birth certificates; stillbirths and child adoption; protection, placing, and child labor.

As ignorance of the law, especially among those supposedly well educated and trained in a profession, does not excuse a nurse from blame, one lesson that this book drives home is the necessity for knowing the law of the state in which one is practising as it relates to public health and public health nursing.

Administrators of nursing service will find useful information in the chapters on serving as a witness, court testimony, use of confidential records, subpoena, privileged communications, and procedures in cases of criminal action. Altogether a valuable book to have on hand as a reference.

DOROTHY DEMING

**A Sanitary Code. Containing Definitions and Interpretations for Guidance of Manufacturers of Paper Packaging Materials and Containers for Perishable Foods—By J. R. Sanborn. Geneva, N. Y.: New York State Agricultural Experiment Station, Cornell**

*University, 1945. 16 pp. Mimeographed. Free from publisher, address requests to author.*

This code is a statement of sanitary objectives for the guidance of the industry, prepared at the request of certain manufacturers. It covers all forms of paper and paperboard products used in packaging or as containers or closures for perishable foods. Among the items included are: Use of clean, sanitary virgin stock; prohibition against poisonous or deleterious materials or adhesives; waterproofing; protection from contamination; bacteriological standards for disintegrated paper stock and for the finished container and closure; sanitary standards for the converting plant; health and cleanliness of personnel. A plant inspection form is presented which incorporates the detailed requirements.

The code is an elaboration of the standards promulgated by the Public Health Service and other health agencies, seasoned with several years' experience by the author in actual work with the plants and in the laboratory. The requirements are being met by manufacturers whose processes are clean and sanitary. Paperboard produced by the larger mills complies 98 per cent of the time with the limit of 250 colonies per gram of disintegrated stock. Compliance by all members of the industry with the provisions of this code through a system of self policing will win the sympathetic support of health authorities. Administrative health officers, milk and food control officials, and public health engineers should be conversant with this effort of the industry.

A. W. FUCHS

**The Art of Home Nursing—By Betty Quinn Wagner. Philadelphia: Davis, 1945. 314 pp. Price, \$2.00.**

This is a book intended for every individual who may, as the author states, need to know simple nursing technics in



everyday home situations. Unfortunately it attempts to cover a very wide field in a very cursory fashion and is scattered in its focus. The reader is left with many questions unanswered, and one wonders what is to be gained by such suggestions as "compile a scrapbook of your Ideal Dream Home" and "read a copy of the Pure Food, Drug and Cosmetic Act at the Public Library."

The difference in function between a registered professional and a licensed practical nurse is not made clear, nor is there mention of visiting and public health nurses, or how to secure them.

In the field of technics to be carried out by the home nurse, the procedures are confused in order, (for example, page 51, in which the "nurse" is instructed to stop and chart the degrees of temperature before cleaning the rectal thermometer), and are at times too technically described for the average "lay" reader. Not many home nurses will be able to use the "conversion tables" (p. 116) in giving medicines and one might question the "therapeutic dietary rules" for "kidney trouble," gall-bladder trouble and other ailments (pp. 137-138).

The author is at her best when describing a limited field of care in which a few simple directions are stressed, as in care of the aged and chronically ill (Chap. XIV). DOROTHY DEMING

**Physicians' Guidebook to Public Health Laboratory Services—Hartford, Conn.: Connecticut State Department of Health, 1945. 128 pp. Free from publisher.**

Drs. Stanley H. Osborn, Friend Lee Mickle, and their colleagues of the Bureau of Laboratories of their Department of Health have put us all in their debt and should be congratulated by their fellow professionals in local and state services for the clear, convenient, and comprehensive information they

have set forth for the use of the practitioner of medicine.

Taking advantage of the A.P.H.A. report on *Control of Communicable Diseases* as a background, the authors of this latest contribution to uniformity of fact and resources for administrative purposes, have not only briefed the standard data on etiologic agent, source of infection, mode of transmission, and prevalence of each of the 82 disease entities already widely dealt with, but have added ten items, of parasitic infestations and bacterial and other infections, for the identification of which the physician to the sick needs confirmation or correction by laboratory procedures.

The public health laboratory, indispensable alike for the health officer, the epidemiologist, and the family or hospital physician, has in this guidebook done a good job of salesmanship. Taken together with the A.P.H.A. report on *Communicable Disease Control*, now well on toward its third hundred thousand copies, this Connecticut State Department of Health publication of the laboratory diagnostic resources makes it easy to learn and practise modern medicine in at least that field, which, since the time of Pasteur, has brought increasing returns in terms of lives saved and illnesses mitigated.

Every physician wants to know exactly what his nearest public health laboratory offers, how specimens must be presented and, above all, the limitations of the laboratory tests in establishing or altering the clinical diagnoses.

HAVEN EMERSON

**Penicillin Therapy, including Tyrothricin and Other Antibiotic Therapy—By John A. Kolmer, M.D. New York: D. Appleton-Century, 1945. 285 pp. Price, \$5.00.**

This is an excellent summary of available knowledge on the use of penicillin and other antibiotics in the treatment

of human disease. It contains a very complete bibliography of original publications on the theoretical and practical aspects of these therapeutic agents. New information is accumulating rapidly and it is expected that this volume will soon be outdated. After having made such an excellent beginning, it is assumed that new editions of this book will appear from time to time as the need arises. At the present

time this volume provides for the practising physician easy access to available knowledge.

DAVID G. RUTSTEIN

The Book Service reports that one mail on November 21 brought in 40 individual requests and one request for 100 copies of *The Control of Communicable Diseases*, of which the circulation now approaches 200,000 copies.

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**They Just Stop Breathing!**—Though this is probably not immediately your business, the matter is so out-of-the-ordinary that you will be curious about it. An equalizing pressure chamber has been developed to induce lung rest for patients with bilateral tuberculosis. When respiration stops the lesions in both sides of the lungs have a chance to heal—and they did so in 6 out of 10 far advanced cases.

BARACH, A. L. The Treatment of Pulmonary Tuberculosis in an Equalizing Pressure Chamber. *Am. Rev. Tuberc.* 52, 2:122 (Aug.), 1945.

**Job for DDT?**—Continuance of sporadic cases of St. Louis encephalitis since the last epidemic indicates the persistence of an infectious agent. Epidemiologic findings suggest the possibility that blood sucking vectors are involved. Dog ticks, mosquitoes, chicken mites are all suspect. The last word remains to be said.

BIATTNER, R. J., and HEYS, F. M. St. Louis Encephalitis. *J.A.M.A.* 129, 13:854 (Nov. 24), 1945.

**When Does Negligence Become Criminal?**—There are a half million hospital attendants in these United

States exposed to the occupational hazard of tuberculosis. The percentage of hospitals which now have inadequate tuberculosis control or none is not so disturbing as is the large number that have no post-war plans to create this safeguard.

BRAHDY, L. Control of Occupational Tuberculosis in Hospitals. *J. Indust. Hyg. & Toxicol.* 27, 8:234 (Oct.), 1945.

**Sauer Success Story**—In Boston, 3,000 children were immunized against whooping cough with Sauer's vaccine or a detoxified antigen. Of the exposed Sauer-immunized children 9 per cent contracted pertussis; 67 per cent of those "protected" by the detoxified antigen came down with the disease; while 82 per cent of the controls succumbed. It may be added that the other vaccine did modify the course of the disease in a majority of cases.

CRAVITZ, L., and CAULEY, J. H. Pertussis Immunization Program of the Boston Health Department. *J.A.M.A.* 129, 8:539 (Oct. 20), 1945.

**Hungry Mosquitoes**—Though this study does not indicate that anopheline mosquitoes necessarily fly in dangerous numbers beyond the "one mile limit," it does show that they will fly further,

especially if no succulent humans are nearer to furnish an easy meal.

EYLES, D. E., *et al.* Long-range Dispersal of *Anopheles quadrimaculatus*. Pub. Health Rep. 60, 43:1265 (Oct. 26), 1945.

**Sans Teeth, etc.**—Three papers on national dental needs read at the last meeting of our own American Public Health Association are mentioned here because you may want to know what the dentists were talking about when your back was turned. Of every hundred Americans only 27 visit the dentist. Yes, there is a whale of a lot to be done—and a minnow of organization to do it.

FULTON, J. T. A National Dental Care Program: Presentation of the Dental Problem (and two related papers). J. Am. Dent. A. 32, 19 (Oct. 1), 1945.

—“We Have Left Undone . . .”—Taxpayers shell out 11 million dollars annually in direct costs for the maintenance of paretics and—don't forget—there are other costly and late manifestations of syphilis. Money loss of income adds an additional charge of 112 million dollars against paresis alone. We will continue to pay through the nose for our earlier sins of omission in venereal disease control.

ISKRAANT, A. P. The Economic Cost of Paresis in the United States. Ven. Dis. Inform. 26, 8:175 (Aug.), 1945.

**Next Best to a Satisfactory Diet**—This authoritative discussion on the use and abuse of vitamins concludes that self-interest alone should induce commercial concerns to censor their advertising to eliminate false claims. Someone should tell this to the pill-makers who make the night air-waves hideous.

JOLLIFFE, N. The Preventive and Therapeutic Use of Vitamins. J.A.M.A. 129, 9:613 (Oct. 27), 1945.

**An Old Friend**—For more than twenty years periodic health examinations have been preached, but honest

investigation indicates that they have played only a minor rôle in preventive medicine. If it is looked upon as a screening process to be given at a reasonable cost the health examination might become a more useful tool, opines this writer.

LEAVELL, H. R. Future of the Periodic Health Examination. South. M. J., 38, 8:549 (Aug.), 1945.

**Quote**—In patients with scarlet fever treated with penicillin . . . streptococci disappear . . . within forty-eight hours, and if treatment is continued for seven days . . . (they) do not reappear. **Unquote.** Though the number of cases is small the conclusion, slightly abbreviated, seems worth spreading before you.

MEADS, M., *et al.* Penicillin Treatment of Scarlet Fever. J.A.M.A. 129, 12:785 (Nov. 17), 1945.

**Even the Rats Must Be Hungrier**—Vessels from foreign ports are bringing in more rats.

OLESEN, R. Increase of Rat Infestation of Vessels Coming to New York. Pub. Health Rep. 60, 44:1295 (Nov. 2), 1945.

**What Next!**—Experience reported here indicates that women may be allowed to get out of bed on the first or second day postpartum to eat their meals, go to the toilet, and await bed making. No harmful results occurred and the majority of patients liked the new arrangement.

ROSENBLUM, G., *et al.* Early Rising in the Puerperium. J.A.M.A. 129, 13:849 (Nov. 24), 1945.

**Not Bad for a Nation of Cripples!**—You'll find a lot of useful statistics about national and industrial health in this paper which tells how a wartime labor force augmented largely by 5 million 4-F's and a lot of women and old men produced 170 billion dollars worth of war material. Our farm popu-

lation, severely drained and in dubious physical shape, increased agricultural production by a third. You'll wonder how they ever managed to do the job.

ROWNTREE, L. G. The Coming Age of Industrial Medicine. J.A.M.A. 129, 9:595 (Oct. 27), 1945.

**A Psychiatrist Speaks Up**—Our democratic principles have but two objectives—to insure and increase the dignity and security of the individual. These goals are reached through equality of men, rule by the people, civil liberties, and economic security. Without democracy there can be no mental health. Health workers all have an inescapable responsibility: to

do their full share toward making this a democratic nation.

SCHREIBER, J. The Interdependence of Democracy and Mental Health. Ment. Hyg. 29, 4:606 (Oct.), 1945.

**Fluorine in Pill-form**—Instead of adding fluorine to drinking water, these investigators administered it in pills. To some children they gave it in conjunction with extra vitamins C and D. Their findings are sufficiently worth while for you to make the effort to hunt out the paper. No summary here to please the lazy.

STREAM, L. P., and BEAUDET, J. P. Inhibition of Dental Caries by Ingestion of Fluoride-Vitamin Tablets. New York State J. Med. 45, 20:2183 (Oct. 15), 1945.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed in future issues.*

- THE ADJUSTMENT OF THE NERVOUS VETERAN IN INDUSTRY.** By Meyer Brown, M.D. Chicago: Zurich Insurance Cos., 1945. 52 pp. Price, \$10.
- BIOENERGETICS AND GROWTH.** With Special Reference to the Efficiency Complex in Domestic Animals. By Samuel Brody, Ph.D. New York: Reinhold, 1945. 1023 pp. Price, \$8.50.
- THE CHEMISTRY AND TECHNOLOGY OF FOOD AND FOOD PRODUCTS.** By Morris B. Jacobs, Ph.D. New York: Interscience, 1944. Vol. I—952 pp. Vol. II—890 pp. Price, \$19.00.
- THE CLINICAL APPLICATION OF THE RORSCHACH TEST.** By Ruth Bochner, M.A., and Florence Halpern, M.A. 2d ed. rev. New York: Grune & Stratton, 1945. 331 pp. Price, \$4.00.
- COLLECTED REPRINTS OF THE GRANTEES OF THE NATIONAL FOUNDATION FOR INFANTILE PARALYSIS, 1944, VOL. V.** New York: National Foundation for Infantile Paralysis, 1945. Publication No. 33D.
- THE CONTINUING BATTLE FOR THE CONTROL OF THE MIND OF YOUTH.** By Porter Sargent. Reprinted from the 29th edition of *A HANDBOOK OF PRIVATE SCHOOLS*. Boston: Porter Sargent, 1945. 153 pp. Price, \$1.50.
- DAIRY BACTERIOLOGY AND PUBLIC HEALTH. A Handbook for Veterinarians and Milk Sanitarians.** By C. S. Bryan, D.V.M. Minneapolis: Burgess Publishing Co., 1945. 33 pp. Price, \$1.00.
- EFFECTIVE LIVING.** By C. E. Turner, Dr.P.H., and Elizabeth McHose, M.A. 2d ed. St. Louis: C. V. Mosby, 1945. 432 pp. 164 illus. Price, \$2.00.
- ESSENTIALS OF NEURO-PSYCHIATRY.** A Textbook of Nervous and Mental Disorders. By David M. Olkon, M.D. Philadelphia: Lea & Febiger, 1945. 310 pp., illus. Price, \$4.50.
- FACTS AND FIGURES ABOUT INFANTILE PARALYSIS.** New York: National Foundation for Infantile Paralysis, 1945. 30 pp. Free from publisher, 120 Broadway, New York 5, N. Y.
- FRONTIERS IN CHEMISTRY.** Vol. III—*Advances in Nuclear Chemistry and Theoretical Organic Chemistry*. Edited by R. E. Burk and Oliver Grummitt. New York: Interscience, 1945. 178 pp. 38 illus. Price, \$3.50.
- THE FUTURE OF THE AMERICAN HOSPITAL SYSTEM.** 1945 Hospital Review. Chicago: American Hospital Assn., 1945. 63 pp. Price, \$25.
- THE GROWTH OF PERSONNEL MANAGEMENT IN GREAT BRITAIN DURING THE WAR, 1939-1944.** By G. R. Moxon. Reprinted from the *International Labour Review*, December, 1944. London: Institute of Labor Management, 1945. 32 pp. Price, \$25.
- HEALTH EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS.** Prepared by the Kansas State Policy-Making Committee on Health Education. Topeka: Kansas State Board of Health, 1945. 82 pp.
- HEALTH EDUCATION IN COLLEGES.** Prepared by the Kansas State Policy-Making Committee on Health Education. Topeka: Kansas State Board of Health, 1945. 39 pp.
- HEALTH SERVICE AREAS.** Requirements for General Hospitals and Health Centers. By Joseph W. Mountin, Elliott H. Pennell and Vane M. Hoge. Washington, D. C.: Government Printing Office, 1945. *Public Health Bulletin* 292. 68 pp. Price, \$25.
- HYPNOANALYSIS.** By Lewis R. Wolberg, M.D. New York: Grune & Stratton, 1945. 355 pp. Price, \$4.00.
- THE INDIVIDUAL HOSPITAL.** 1945 Hospital Review. Chicago: American Hospital Assn., 1945. 78 pp. Price, \$25.
- MARRIAGE IS A SERIOUS BUSINESS.** By Dr. Randolph Ray. New York: McGraw-Hill, 1944. 164 pp. Price, \$2.00.
- THE MATHEMATICS OF DRUGS AND SOLUTIONS.** A Work-Book Designed to Supplement Textbooks on Drugs and Solutions for Schools of Nursing. By Harry C. Biddle, M.A., and Disa W. Sittler, R.N. Philadelphia: Davis, 1944. 107 pp. Price, \$1.00.
- MENTAL DISORDERS IN LATER LIFE.** Edited by Oscar J. Kaplan. Stanford: Stanford University Press, 1945. 436 pp. Price, \$5.00.
- THE NEWSPAPER. ITS MAKING AND ITS MEANING.** By the Members of the Staff of the New York Times. New York: Scribner's, 1945. 207 pp. Price, \$2.00.
- MODERN UROLOGY FOR NURSES.** By Sheila Maureen Dwyer, R.N., and George W. Fish, M.D. 2d ed. rev. Philadelphia: Lea & Febiger, 1945. 287 pp., illus. Price, \$3.25.

- NURSING IN CLINICAL MEDICINE.** By Julius Jensen, Ph.D., and Deborah MacLurg Jensen, R.N. 2nd ed. New York: Macmillan, 1945. 829 pp. Price, \$3.50.
- NUTRITION IN REVIEW.** Report of the New York State Joint Legislative Committee on Nutrition. Albany: N. Y. State Joint Legislative Committee on Nutrition, 1945. Legislative Document 1945 No. 49. 191 pp. Free from Thomas C. Desmond, 94 Broadway, Newburgh, N. Y.
- OFF THE JOB LIVING.** A Modern Concept of Recreation and Its Place in the Postwar World. By G. Ott Romney. New York: A. S. Barnes, 1945. 232 pp. Price, \$2.75.
- ORGANIZED LABOR'S PARTICIPATION IN SOCIAL WORK.** Bulletin of the Russell Sage Foundation Library 163. New York: Russell Sage Foundation, 1945. 8 pp. Price, \$.10.
- POPULATION. DIFFERENTIAL FERTILITY 1940 AND 1910. WOMEN BY NUMBER OF CHILDREN EVER BORN. 16TH CENSUS OF THE UNITED STATES: 1940.** Prepared under the supervision of Dr. Leon E. Truesdell. Washington, D. C.: Government Printing Office, 1945. 410 pp. Price, \$.65.
- PREPAYMENT MEDICAL CARE ORGANIZATIONS.** By Margaret C. Klem. 3rd ed. Washington, D. C.: Government Printing Office, 1945. Bureau Memorandum 55, 148 pp. Price, \$ .25.
- A PSYCHIATRIC PRIMER FOR THE VETERAN'S FAMILY AND FRIENDS.** By Alexander G. Dumas, M.D., and Grace Keen. Minneapolis: University of Minnesota Press, 1945. 214 pp. Price, \$2.00.
- PSYCHOLOGY FOR NURSES.** Designed and Written for Student Nurses. By Bess V. Cunningham, Ph.D. New York: D. Appleton-Century, 1946. 364 pp. 51 illus. Price, \$3.00.
- PUBLIC HEALTH AND WELFARE ORGANIZATIONS IN CANADA.** The Postwar Problems in the Canadian Provinces. By Harry M. Cassidy, Ph.D. Boston: Bruce Humphries, Inc., 1945. 464 pp. Price, \$5.00 paper; \$6.00 cloth.
- THE ROMANCE OF HUMAN ARCHITECTURE.** By Maurice Chideckel, M.D. Boston: Bruce Humphries, Inc., 1945. 107 pp. Price, \$2.00.
- RULES AND REGULATIONS FOR THE CONTROL OF COMMUNICABLE DISEASES.** By the Division of Communicable Diseases, Department of Public Health. Springfield, Ill.: Dept. of Health, 1945. 89 pp.
- THE STORY BEHIND GREAT MEDICAL DISCOVERIES.** By Elizabeth Rider Montgomery. New York: McBride, 1945. 247 pp. Price, \$2.00.
- SUGGESTED SCHOOL HEALTH POLICIES.** A Charter for School Health. 2d ed. rev. New York: Health Education Council, 1945. 48 pp. Price, \$.25.
- TRENDS IN MENTAL DISEASE.** By the American Psychopathological Association. New York: King's Crown Press, 1945. 120 pp. Price, \$2.00.
- VISITS AND CASES IN NONOFFICIAL AGENCIES.** By Dorothy E. Wiesner and Margaret M. Murphy. New York: National Organization for Public Health Nursing, 1945. 16 pp. Price, \$.50.
- VITAL STATISTICS OF THE UNITED STATES, 1943.** By the Bureau of the Census of the U. S. Department of Commerce. Prepared under the supervision of Halbert L. Dunn, M.D. Part I. Place of Occurrence. 228 pp. Price, \$1.50. Part II. Place of Residence. 580 pp. Price, \$2.50. Washington, D. C.: Government Printing Office, 1945.
- VITAMIN A IN BUTTER.** Prepared by the Bureau of Dairy Industry, U. S. Department of Agriculture. Washington, D. C.: Government Printing Office, 1945. Miscellaneous Publication 571. 14 pp.
- VOCATIONAL AND PROFESSIONAL MONOGRAPHS. PUBLIC RELATIONS.** By Edward L. Bernays. Boston: Bellman Publishing Co., 1945. 23 pp. Price, \$.75.
- WAR NEUROSES.** By Roy R. Grinker, Lt. Col., M.C., and John P. Spiegel, Major, M.C. Philadelphia: Blakiston, 1945. 145 pp. Price, \$2.75.
- A WORKBOOK IN CHILD DEVELOPMENT (AND TEACHERS' GUIDE).** By George E. Schlessler, Ph.D. Philadelphia: Saunders, 1945. 138 pp. Price, \$1.00.
- WORKING CONDITIONS AND EMPLOYEE SERVICES.** By B. J. Cohen and M. M. Towy-Evans. London: Institute of Labour Management, 1945. 87 pp. Price, \$ .50.
- A SANITARY CODE.** Containing Definitions and Interpretations for Guidance of Manufacturers of Paper Packaging Materials and Containers for Perishable Foods. By J. R. Sanborn. Geneva: N.Y.S. Agricultural Experiment Station, 1945. 16 pp. Free from publisher. Address requests to J. R. Sanborn.

## ASSOCIATION NEWS

### PUBLIC HEALTH ASSOCIATION OF NEW YORK CITY HOLDS VICTORY MEETING

The Public Health Association of New York City held a two day meeting in New York City on December 13 and 14 in collaboration with the American Public Health Association. Although emphasis was laid especially on developments locally, a good part of the program was devoted to the transitional period between war and peace, and to the broad orientation of public health workers. About 700 persons were in attendance. The meetings were held under the presidency of Sol Pincus, C.E., Deputy Commissioner of Health, New York City Department of Health; Frank Kiernan of New York City was Chairman of the Program Committee and Secretary. The Committee on Arrangements was headed by John L. Rice, M.D., and that on publicity by Horace H. Hughes. Participants from outside New York City included Abel Wolman, Dr.Eng., Baltimore; Ira V. Hiscock, Sc.D., Yale University, New

Haven; George T. Palmer, Dr.P.H., U. S. Public Health Service, Washington; Warren F. Draper, M.D., Deputy Surgeon General, U. S. Public Health Service, Washington; Theodore A. Olson, University of Minnesota, Minneapolis; J. J. Bloomfield, Industrial Hygiene Division of the U. S. Public Health Service, Washington; Robert H. Riley, M.D., State Department of Health, Baltimore; W. Palmer Dearing, M.D., Division of Public Health Methods, U. S. Public Health Service, Washington; C.-E. A. Winslow, Dr.P.H., New Haven; Edward S. Rogers, M.D., Asst. Commissioner for Medical Administration, New York State Department of Health, Albany; Mayhew Derryberry, Ph.D., Chief of Field Activity in Health Education, U. S. Public Health Service, Washington; and Amos Christie, M.D., Department of Pediatrics, Vanderbilt University School of Medicine, Nashville.

### GOVERNING COUNCIL ELECTIONS

The A.P.H.A. Governing Council has completed its 1945 election of Fellows, Life Members, and Affiliated Societies. The South Dakota Public Health Association was admitted as an Affiliated Society, 7 Life Members were approved, and the following individuals were elected to Fellowship.

#### *Health Officers Section*

George H. Becker, M.D., Director, Bureau of Communicable Diseases, San Francisco Department of Public Health, San Francisco, Calif.  
Millard B. Bethel, M.D., M.P.H., Health

Officer, Cabarrus County Health Department, Concord, N. C.

Philip E. Blackerby, M.D., State Health Commissioner, Louisville, Ky.

Leroy E. Burney, M.D., M.P.H., State Health Commissioner, Indianapolis, Ind.

George F. Campana, M.D., M.P.H., State Health Officer, Bismarck, N. D.

F. R. Nicholas Carter, M.D., Health Officer and Secretary, Board of Health, South Bend, Ind.

Albert C. Edwards, M.D., M.P.H., Director, St. Clair County Health Dept., Port Huron, Mich.

Floyd M. Feldman, M.D., Dr.P.H., Health Officer, Rochester City Health Dept., Rochester, Minn.

- Henry A. Holle, M.D., Surgeon, U. S. Public Health Service, Washington, D. C. (on UNRRA assignment abroad)
- Roscoe P. Kandle, M.D., M.P.H., Director, Division of Local Health Service, State Board of Health, New Orleans, La.
- Jacob H. Landes, M.D., M.P.H., Senior Health Officer, Department of Health, New York, N. Y.
- Frederick D. Mott, M.D., C.M., Chief Medical Officer, Farm Security Administration, Washington, D. C.
- Frederick A. Musacchio, M.D., M.S.P.H., Director, Laredo-Webb County Health Unit, Laredo, Tex.
- Emil A. Palmquist, M.D., M.P.H., City Health Commissioner, Seattle, Wash.
- Angelo M. Perri, M.D., M.P.H., Chief of Communicable Disease Division, Department of Public Health, Philadelphia, Pa.
- William A. Powell, M.D., Contra Costa County Health Officer, Martinez, Calif.
- C. L. Putnam, M.D., M.S.P.H., Deputy Commissioner and Director of Local Health Services, State Department of Health, Des Moines, Iowa
- Arthur L. Ringle, M.D., C.P.H., Director, State Department of Health, Seattle, Wash.
- Mason Romaine, M.D., M.P.H., Health Officer, Petersburg, Va.
- Roy M. Seideman, M.D., Dr.P.H., Industrial Hygiene Physician, State Department of Health, Hartford, Conn.
- Ellis D. Sox, M.D., C.P.H., Chief, Division of Local Health Service, State Department of Public Health, San Francisco, Calif.
- Major General Morrison C. Stayer, M.C., Chief Surgeon, North African-Mediterranean Theater of Operations, U. S. Army (overseas address)
- James L. Troupin, M.D., M.S.P.H., District Health Officer, Health Department, New York, N. Y.
- I. Oscar Weissman, M.D., M.P.H., Surgeon (R), U. S. Public Health Service; Director, Muskogee City-County Health Dept., Muskogee, Okla.
- Maurice S. Whiteside, M.D., Health Officer, Cullman County Health Dept., Cullman, Ala.
- John M. Whitney, M.D., Superintendent of Health, New Orleans, La.
- Charles L. Wilbar, Jr., M.D., President, Territorial Board of Health, Honolulu, T. H.
- Ralph C. Williams, M.D., Assistant Surgeon General and Chief, Bureau of Medical Services, U. S. Public Health Service, Washington, D. C.
- and Head, Department of Surgery and Medicine, Michigan State College, East Lansing, Mich.
- Irma L. Comstock, B.S., Principal Biologist, State Board of Health Laboratory, Jefferson City, Mo.
- William A. Feirer, M.D., Sc.D., Vice-President and Director, Medical Research Division, Sharp & Dohme, Philadelphia, Pa.
- Harald N. Johnson, M.D., Member of Staff and Director of Rabies Study, International Health Division, Rockefeller Foundation, Montgomery, Ala.
- David B. Lackman, Ph.D., Assistant Bacteriologist, U. S. Public Health Service, Hamilton, Mont. (on military leave)
- Einar Leifson, Ph.D., Professor of Bacteriology, University of South Dakota, Vermillion, S. D.
- Benjamin S. Levine, Ph.D., Director, Division of Laboratories, State Board of Health, Pierre, S. D.
- Robert P. Myers, Ph.D., Chief Bacteriologist, Research Laboratory, National Dairy Products Corp., Baltimore, Md.
- Wade W. Oliver, M.D., Professor of Bacteriology, Long Island College of Medicine, Brooklyn, N. Y.
- Clarence C. Ruchhoff, B.S. in Ch.E., Principal Chemist, U. S. Public Health Service, Cincinnati, Ohio
- Roy Schneider, Ph.D., Bacteriologist in Charge, Bacteriological Section, Industrial Hygiene Research Laboratory, National Institute of Health, Bethesda, Md.
- Robert M. Shaw, M.D., D.P.H., Professor of Bacteriology and Hygiene, University of Alberta, Edmonton, Alberta
- Lt. Comdr. Frank H. Stubbs, USN, Executive Officer, Duke University N.R.O.T.C., (formerly Director, Branch Laboratory, Georgia State Health Dept.), Albany, Ga.
- A. Elizabeth Verder, Ph.D., Bacteriologist, National Institute of Health, Bethesda, Md.

#### *Vital Statistics Section*

- Marta Fraenkel, M.D., Medical Advisor, Bureau of Research and Statistics, Social Security Board, Washington, D. C.
- Marjorie E. Gooch, Sc.D., Chief, Health Statistics Section, Division of Statistical Research, Children's Bureau, Washington, D. C.
- Iwao M. Moriyama, Ph.D., C.P.H., Senior Social Science Analyst, Bureau of the Census, Washington, D. C.
- Marcelino Pascua-Martinez, M.D., Associate Professor, Johns Hopkins School of Hygiene and Public Health, Baltimore, Md.
- Elliott H. Pennell, B.S., Senior Statistician, U. S. Public Health Service, Bethesda, Md.
- A. Hardisty Sellers, M.D., D.P.H., Medical

#### *Laboratory Section*

- Claude S. Bryan, D.V.M., Ph.D., Professor



Officer in charge of Medical Statistics,  
Royal Canadian Air Force, Toronto, Ontario

#### *Engineering Section*

Col. William A. Hardenbergh, Sn.C., Director,  
Sanitary Engineering Division, Surgeon  
General's Office, U. S. Army, Washington,  
D. C.

Arthur H. Herberger, C.E., M.S., Director,  
Division of Sanitation, Nassau County De-  
partment of Health, Mineola, N. Y.

#### *Industrial Hygiene Section*

August Baier, M.D., Medical Director, Des  
Moines Ordnance Plant, U. S. Rubber Co.,  
Des Moines, Iowa

Edgar C. Barnes, B.S., Industrial Hygiene  
Engineer, Westinghouse Electric Corpora-  
tion, East Pittsburgh, Pa.

Rodney R. Beard, M.D., M.P.H., Assistant  
Professor of Public Health and Preventive  
Medicine, Stanford Medical School, San  
Francisco, Calif.

Harold T. Castberg, M.D., Chief, Bureau of  
Adult Health, State Department of Public  
Health, Berkeley, Calif.

Walter E. Doyle, M.D., Chief, Medical Unit,  
Industrial Hygiene Division, U. S. Public  
Health Service, Washington, D. C.

John W. Dugger, M.D., Director, Division of  
Industrial Hygiene and Factory Inspection,  
State Board of Health, Jackson, Miss.

Anna M. Fillmore, R.N., M.P.H., Industrial  
Nursing Consultant, Visiting Nurse Service  
of New York, New York, N. Y.

Donald O. Hamblin, M.D., Medical Director,  
American Cyanamid Co., New York, N. Y.

Clifford Kuh, M.D., Dr.P.H., Director of  
Public Health, Permanente Foundation Hos-  
pital, Oakland, Calif.

Hedwig S. Kuhn, M.D., Ophthalmologist;  
Member, Industrial Vision Institute, Purdue  
University; Secretary, Joint Committee of  
Industrial Ophthalmology, American Med-  
ical Association and American Academy of  
Ophthalmology, Hammond, Ind.

Melville H. Manson, M.D., F.A.C.S., Medical  
Director, American Telephone and Tele-  
graph Co., New York, N. Y.

John M. McDonald, M.D., D.P.H., Director,  
Bureau of Occupational Diseases, City  
Health Department, Baltimore, Md.

Clarence W. Muehlberger, Ph.D., Toxicologist,  
State Department of Health, Lansing, Mich.

Samuel M. Peck, M.D., Special Consultant on  
Dermatology and Medical Director (R),  
U. S. Public Health Service, New York,  
N. Y.

Crit Pharris, M.D., M.P.H., Assistant Medical

Director, United Aircraft Corp., East Hart-  
ford, Conn.

John J. Prendergast, M.D., Medical Director,  
Chrysler Corporation, Detroit, Mich.

George H. Zerbst, M.D., Director, Division of  
Industrial Health, State Board of Health,  
Columbia, S. C.

#### *Food and Nutrition Section*

Anna de Planter Bowes, M.A., Chief, Division  
of Nutrition, Bureau of Maternal and Child  
Health, State Department of Health,  
Harrisburg, Pa.

Frank L. Gunderson, Ph.D., Director of Nu-  
trition, the Quaker Oats Co., and Executive  
Secretary, Food and Nutrition Board,  
National Research Council, Washington,  
D. C.

Icie Macy Hoobler, Ph.D., Director, Research  
Laboratory, Children's Fund of Michigan,  
Detroit, Mich.

C. Frances MacKinnon, M.S., Consultant in  
Nutrition, Unit for Inter-American Co-  
operation, Children's Bureau, Washington  
D. C.

Elsa Orent-Keiles, Sc.D., Principal Nutrition  
Chemist in Charge of Nutrition Investiga-  
tions, U. S. Department of Agriculture,  
Washington, D. C.

Telford W. Workman, D.V.M., Ph.D., Pro-  
duction and Technical Director, Northeast  
District, The Borden Co., Bridgeport, Conn.

#### *Maternal and Child Health Section*

Samuel R. Berenberg, M.D., Chief, Child  
Health Services, Health Department, New  
York, N. Y.

Lt. Comdr. Tipton M. Jolliffe (MC), U.S.  
N.R., Medical Officer of Health, Epidemi-  
ology Unit No. 21, N.A.T.B., Corpus  
Christi, Tex.

Viktor O. Wilson, M.D., M.P.H., Director,  
Division of Child Hygiene, State Depart-  
ment of Health, Minneapolis, Minn.

#### *Public Health Education Section*

Theron H. Butterworth, Ph.D., Associate Milk  
Specialist, U. S. Public Health Service (at  
present on leave of absence to complete a  
year of graduate study in Health Educa-  
tion), Chapel Hill, N. C.

Donald A. Dukelow, M.D., Director of Public  
Health Education, State Department of  
Health, Minneapolis, Minn.

Eleanor Hassell, M.P.H., Assistant Director of  
Health Education, State Board of Health,  
Jackson, Miss.

Ann W. Haynes, M.P.H., Acting Chief,  
Bureau of Health Education, State Depart-  
ment of Public Health, San Francisco,  
Calif.

- Jean Henderson, Chief, Public Relations and Recruitment, Cadet Nurse Corps, U. S. Public Health Service, Washington, D. C.
- Raymond U. Hilleman, M.A., Health Education Secretary, Ohio Public Health Association, Columbus, Ohio
- Rosemary M. Kent, M.A., Health Consultant, City Public Schools, Winston-Salem, N. C.
- Adelaide R. Ross, M.Ed., Associate in Health Education, National Tuberculosis Association, New York, N. Y.
- Alice L. Spillane, M.P.H., Chief, Division of Health Education, State Department of Health, Seattle, Wash.

#### *Public Health Nursing Section*

- Ruth Albrecht, R.N., B.S., (formerly Assistant Director, Division of Public Health Nursing, Texas State Department of Health), at present working toward M.A. at University of Chicago, Chicago, Ill.
- Adaline Chase, R.N., M.A., Assistant Professor, Department of Nursing Education, School of Education, University of Pennsylvania, Philadelphia, Pa.
- Beatrice M. Clutch, R.N., M.A., Acting Director, Nursing Education Division, George Peabody College, Nashville, Tenn.
- Pearl P. Coulter, R.N., M.S., Associate Professor of Public Health Nursing, University of Colorado, Boulder, Colo.
- Judith A. Davies, M.S., R.N., Director of Public Health Nursing, Santa Barbara County Health Department, Santa Barbara, Calif.
- Norma B. Eskil, B.S., R.N., Director of Public Health Nursing, Health Department, Flint, Mich.
- Ella M. Hott, R.N., M.A., Director, Division of Public Health Nursing, State Board of Health, Jefferson City, Mo.
- Janet Jennings, R.N., M.A., Educational Director, State Department of Public Health, Springfield, Ill.
- Marie L. Johnson, R.N., B.S., Assistant Director, Nursing Bureau, Metropolitan Life Insurance Co., New York, N. Y.
- Winifred M. Kellogg, B.S., R.N., Educational Director, Visiting Nurse Association, Detroit, Mich.
- Esther M. Latimer, R.N., M.P.H., Assistant Professor of Nursing, School of Nursing, University of Michigan, Ann Arbor, Mich.
- Amy A. MacOwan, R.N., M.A., Assistant Professor of Public Health Nursing, School of Nursing, University of California Berkeley, Calif.
- Ida McRoberts, R.N., M.A., Director of Public Health Nursing, Cattaraugus County Department of Health, Olean, N. Y.
- Ann S. Nyquist, R.N., Acting Director of

- Public Health Nursing, State Department of Health, Minneapolis, Minn.
- Irma E. Reeve, R.N., M.A., Associate Director, New Haven Visiting Nurse Association, New Haven, Conn.
- Elizabeth L. Sewell, R.N., M.A., District Supervising Nurse, State Department of Health, New York, N. Y.
- Pearl Shalit, R.N., M.S., Executive Director, St. Paul Family Nursing Service, St. Paul, Minn.
- Margaret S. Taylor, R.N., M.A., Public Health Nursing Consultant, Tuberculosis Control Division, U. S. Public Health Service, Washington, D. C.
- Grace L. Unzicker, R.N., B.S., Senior Assistant Nurse Officer (R), Tuberculosis Control Division, U. S. Public Health Service, Washington, D. C.

#### *Epidemiology Section*

- Major Claude M. Eberhart, M.C., Chief, Division of Preventive Medicine, Headquarters United Kingdom Base (address overseas)
- William W. Frye, M.D., Ph.D., Professor of Preventive Medicine and Public Health, Vanderbilt University School of Medicine, Nashville, Tenn.
- John R. Paul, M.D., Professor of Preventive Medicine, Yale University Medical School, New Haven, Conn.
- Walter B. Quisenberry, M.D., M.P.H., Venereal Disease Control Officer, State Health Department, Lincoln, Nebr.
- Erich Seligmann, M.D., Chief Bacteriologist, Beth Israel Hospital, New York, N. Y.
- I. Jackson Tartakow, M.D., M.S.P.H., Epidemiologist, Nassau County Department of Health, Mineola, N. Y.

#### *School Health Section*

- Robert M. Robbins, M.B., Ch.B., Surgeon (R), U. S. Public Health Service; Assistant Commissioner of Health, Macon, Ga.
- Benjamin Sachs, M.D., M.S.P.H., Director, Bureau of Maternal and Child Hygiene, City Board of Health, Hartford, Conn.
- Sue H. Thompson, M.D., M.P.H., Commissioner of Health, Columbia County Health Department, Hudson, N. Y.

#### *Dental Health Section*

- Linwood G. Grace, D.D.S., Chief, Dental Division, State Department of Health, Harrisburg, Pa.

#### *Unaffiliated*

- Matthew H. Griswold, M.D., Dr.P.H., Chief, Division of Cancer Research, State Department of Health, Hartford, Conn.

Major M. J. Plishner, Sn.C., Chief, Medical Technical Intelligence Teams, European Theatre of Operations, Carlisle Barracks, Pa.

Prish Chandra Seal, M.B., D.P.H., Assistant Professor of Epidemiology and Vital Statistics, All-India Institute of Hygiene and Public Health, Calcutta, India

Richard G. Soutar, M.D., Director, Department of Health and Development, City Unified School District, Sacramento, Calif.

Paul H. Stevenson, M.D., Dr.P.H., Senior Surgeon, Division of Mental Hygiene, U. S. Public Health Service, Washington, D. C.

Major James M. Suter, M.C., 4th Military Government Group, 5th Provisional Battalion, Civil Affairs Staging Area, Monterey, Calif.

John W. Williams, M.D., Surgeon, U. S. Public Health Service, U. S. Marine Hospital, Detroit, Mich.

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

Reynaldo R. East, M.D., Casilla 119, Angol, Malleco, Chile, S. A., Medico-Jefe Sanitario de la Provincia de Malleco

Clayton B. Mather, M.D., Monroe County Dept. of Health, Monroe, Mich., Director

### *Laboratory Section*

Charles W. Buggs, Ph.D., Wayne Univ., College of Medicine, Detroit 26, Mich., Asst. Prof. of Bacteriology

Ruth M. Chesbro, M.A., 2436 Channing Way, Berkeley 4, Calif., Assoc. in Bacteriology, Univ. of California

Preston E. Harrison, M.D., Univ. of Chicago, Dept. of Bact., Chicago, Ill., Asst. Prof. of Bacteriology

Lt. Col. Theodore W. Keiper, Sn.C., 9th Service Command Laboratory, Fort Lewis, Wash., Director

Esther Langholtz, 300 E. 3 St., New York 9, N. Y., Laboratory Technician, Mason General Hospital

Margery J. Maggs, 2420 Virginia St., Berkeley, Calif., Assoc. in School of Public Health, Univ. of California

Gustave A. Matson, Ph.D., 344 S. 13 E., Salt Lake City, Utah, Assoc. Prof. of Bacteriology, Univ. of Utah

Irwin S. Neiman, M.D., 710 S. Wolcott Ave., Chicago 12, Ill., Assoc. Prof. of Bacteriology and Public Health, Chicago Medical School

Charles F. Pait, Jr., M.D., 1200 N. State St., Los Angeles 33, Calif., Director, Communicable Disease Laboratory, Los Angeles General Hospital

Hugh Parkhurst, P. O. Box 135, Gloucester, Mass., Senior Laboratory Technician, U. S. Army

James E. Prier, New York State College of Veterinary Medicine, Ithaca, N. Y., Student

### *Vital Statistics Section*

Dorothy E. Campbell, R.N., Doswell, Va., Junior Statistician, State Bureau of Vital Statistics

### *Engineering Section*

Floyd B. Taylor, Regional Station Hospital, Fort Belvoir, Va., Sanitary Engineer on Staff of Post Surgeon

### *Industrial Hygiene Section*

George J. Taylor, 2002 Acton St., Berkeley, Calif., Industrial Hygiene Engineer, Bureau of Adult Health, State Dept. of Public Health

### *Food and Nutrition Section*

Dorothy L. Hussemann, M.S., 1106 W. Nevada St., Urbana, Ill., Asst. Prof., Univ. of Wisconsin (on leave)

LaVon A. Thompson, 717 Hightower Bldg., Oklahoma City 2, Okla., Director, Dairy Council of Oklahoma City

Pedro I. Vargas, M.D., Plaza Principal, Buenaventura, Colombia, S. A., Student of Public Health, Yale Univ.

### *Maternal and Child Health Section*

Margaret M. Lawrence, M.D., M.S.P.H., 2713-Meharry Blvd., Nashville 8, Tenn., Asst. Prof. of Pediatrics, Meharry Medical College

### *Public Health Education Section*

Aaron L. Ackerman, D.D.S., 963 Park Ave., Elizabeth 3, N. J., Chairman, Public Health Comm., Chamber of Commerce

Sallie E. Bright, 151 White Plains Road, Bronxville, N. Y., Exec. Director, National Publicity Council for Health and Welfare Services, Inc.

Augusta Browder, R.N., 7101 Fourth Ave.,

Brooklyn, N. Y., Cardiac Worker, Staten Island Tuberculosis and Health Committee  
 Angeles Cebollero, M.S.P.H., Insular Dept. of Health, Santurce, P. R., Health Educator  
 Michael B. Crowley, 203 City Hall, Peoria, Ill., Pres., Board of Health  
 Catherine Emig, 130 E. 24 St., New York 10, N. Y., Assoc. Director, National Publicity Council for Health and Welfare Services, Inc.  
 Margaret J. Idema, M.S.P.H., City-County Health Dept., Winston-Salem, N. C., Health Educator  
 Mazie J. Jones, M.A., M.S.P.H., Health Dept., Fayetteville, N. C., Health Educator  
 Pauline R. Kibbe, Governor's Office, State Capitol, Austin 11, Tex., Exec. Secy., Good Neighbor Commission of Texas  
 Milo T. Means, 308 State House, Boise, Idaho, State Supervisor, Vocational Rehabilitation, State Board for Vocational Education  
 Lee Meyerson, A.M., Univ. of California School of Public Health, Berkeley 4, Calif., Jordan Fellow in Public Health  
 Vesta C. Muehleisen, 202 Bank of America Bldg., San Diego 1, Calif., Exec. Secy., San Diego Social Hygiene Assn.  
 Frank A. Reich, Lake Tomahawk, Wisc., Supt. and Steward, Lake Tomahawk State Camp  
 Charlotte B. Rickman, M.S.P.H., Majestic Bldg., Suite 305, Quincy, Ill., Health Education Representative, State Dept. of Public Health  
 Rudolf Schick, 700 Riverside Drive, New York 31, N. Y., Publisher of Health Education material  
 George M. Shahan, 117 W. 9 St., Los Angeles, Calif., Exec. Secy., Washington Tuberculosis Assn.

#### *Public Health Nursing Section*

Hazel G. Barkley, 1127 St. Paul St., Baltimore 2, Md., Public Health Nurse, Johns Hopkins Hospital  
 Mary Brimberry, R.N., 116 Quincy, Hancock, Mich., Supervising Nurse, Houghton-Keweenaw-Baraga District Health Dept.  
 Ruth N. Crawford, 65 Court St., Room 403, Buffalo 2, N. Y., Asst. District Supervising Nurse, U. S. Public Health Service  
 Ruth M. Herz, 57 Ardsley Rd., Montclair, N. J., Staff Nurse, Elizabeth Visiting Nurse Assn.  
 Sister Agnes Marie, R.N., Our Lady of the Lake School of Nursing, Baton Rouge, La., Director

Beatrice M. Streit, 417 Main St., Glen Ellyn, Ill., Staff Nurse, DuPage County Health Dept.

#### *School Health Section*

Grace C. Hamman, M.A., 2622 Kuahine Drive, Honolulu, T. H., Territorial Director, Bureau of Sight Conservation and Work With the Blind  
 Luther A. Tarbell, M.D., College Hospital, Pullman, Wash., College Physician, Washington State College  
 Ruth K. Wellington, Oak Hill, Arkport, N. Y., Health Teacher, Hornell High School

#### *Dental Health Section*

Neal W. Chilton, D.D.S., 945 Aldus St., New York 59, N. Y., Student, DeLamar Institute of Public Health, Columbia Univ.  
 E. Horace Jones, D.D.S., 3025 Daytona Ave., Cincinnati, Ohio, Supervisor of Oral Hygiene Services, Board of Education.  
 Louis Kroll, D.M.D., 947 Montgomery St., Brooklyn 13, N. Y.  
 Edna Miller, D.M.D., 310 Cedar St., New Haven, Conn., Student in Public Health, Yale Univ.  
 William C. Webb, Jr., D.D.S., 311 S. Juniper St., Philadelphia 7, Pa., Exec. Director, Philadelphia Mouth Hygiene Assn.

#### *Unaffiliated*

Lewis J. Graham, M.D., Corning Glass Works, Corning, N. Y., Medical Director  
 T/4 Mark F. Luxford, H.Q. Co. M.D.E.T.S., Fitzsimons General Hospital, Denver, Colo., Anatomy Instructor  
 A. Robert Peskin, M.D., 20 Park Ave., New York, N. Y., Medical Director, New York City Dept. of Welfare

#### DECEASED MEMBERS

Neal E. Blanton, Milwaukee, Ore., Elected Member 1942, Unaffiliated  
 Severance Burrage, D.P.H., Denver, Colo., Elected Member 1897, Charter Fellow, Laboratory Section  
 Herbert O. Calvery, Ph.D., Washington, D. C., Elected Member 1941, Food and Nutrition Section  
 Francis A. Campana, M.D., Union City, N. J., Elected Member 1941, Health Officers Section  
 P. Conner Hulse, D.D.S., Palmyra, N. J., Elected Member 1937, Dental Health Section  
 Verne L. G. Wilt, D.D.S., Los Angeles, Calif., Elected Member 1940, Public Health Education Section

*A.P.H.A. membership application blank on page XXXIII.*

## EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

### POSITIONS AVAILABLE

(Supplemental to list in December Journal)

**Tuberculosis Control Officer Wanted:** Position of Director of Division of Tuberculosis Control, Seattle Department of Health, to be available January 1, 1946. Applicant must be physician qualified for license in State of Washington and have specialized training and/or experience in clinical tuberculosis and public health tuberculosis control. Full-time position, salary \$5,940 plus reimbursement for travel. Apply Emil E. Palmquist, M.D., Commissioner of Health, Seattle 4, Washington.

**Wanted Immediately:** Medical Director to administer state-wide services to crippled children. Minimum requirements include public health background, special training in pediatrics. Write giving personal data, background and training. Salary \$4,500. Address Carlyle D. Onsrud, Executive Director, State Welfare Board, Bismarck, N. D.

**Wanted:** Experienced Health Officer by newly organized Bi-County Health Department, Southern Illinois. Starting salary \$5,000 plus travel allowance. Applications received by Mr. Lloyd Cannon, Olmstead, Ill.

Western state seeks two physicians for county health officer positions, one paying \$4,800, the other \$5,000. Applicants must be graduates in medicine from approved medical school, have not less than 1 year clinical experience in hospital having standards approved by the AMA, successful completion of not less than 1 academic year graduate work in fundamental subjects of preventive medicine in a recognized school of public health. Address Box RL, Employment Service, A.P.H.A.

**Health Educator Wanted:** Must be experienced in community organization on broad health lines. Position expected to lead to executive secretaryship. Salary \$2,600. Suburb of New York City. Address Box CO, Employment Service, A.P.H.A.

**Health Officers Wanted:** Positions for bureau directors and district and county health officers now open. Salaries range from \$3,900 to \$8,400 varying with education and experience and duties assigned. Liberal retirement plan and travel allowance. Write Merit System Supervisor, Florida State Board of Health and Crippled Children's Commission, 201 Professional Building, Gainesville, for application form and full details.

**Louisville and Jefferson County Health Department** urgently in need of two public health nurses (one Negro, one white) to act as tuberculosis consultants, advise field nurses regarding home visits, participate in student educational program and staff educational program and act as consultants to tuberculosis clinics. Beginning salary \$175 per month. Apply Prentiss M. Terry, Director, Louisville Civil Service Board, 300 City Hall, Louisville, Ky.

**Wanted:** Qualified physicians and nurses with public health education and experience for key positions in the Latin American Republics. For particulars, communicate with Personnel Director, Office of Inter-American Affairs, 499 Pennsylvania Avenue, N.W., Washington 25, D. C.

**Health Educator Wanted:** For position in voluntary organization in north-eastern U. S. Applicant must have specialized training in health education and some experience in community organization. Salary arranged according to experience and training. Apply Box MT, Employment Service, A.P.H.A.

**Wanted:** Dental Hygienists for up-to-date comprehensive program with adults, preschool and school children; full year positions; tenure of office; good salary and liberal travel allowance. Apply Division of Dental Health, State Bureau of Health, Augusta, Me.

**Wanted:** Assistant Chief, Division of Child Hygiene, Ohio Dept. of Health. Salary \$4,400-\$4,800. Must be graduate of approved medical school, have 1 year's graduate training, plus 1 year training or experience in clinical pediatrics. Experience in maternal and child health desirable. Must be licensed in Ohio or eligible for licensure. Apply Chief of Div. of Child Hygiene, Dept. of Health, State Dept. Bldg., Columbus 15, Ohio.

**Sanitary Engineer Wanted,** City of Dallas, to be associated with public health department. Salary range \$171-\$270, starting salary depending on experience. Permanent position under civil service with participation in retirement plan. Make application to Civil Service Board, 309 City Hall, Dallas 1, Texas.

**Wanted:** Bacteriologist with B.S. or B.A. degree and 1 year training in public health bacteriology and serology to work in State Public Health Laboratory. Salary \$1,800 to \$2,280. Apply State Department of Health, Box 1877, Richmond, Va.

**Territorial Department of Health—Juneau, Alaska—**wants public health staff nurses. Minimum salary \$245 Southeastern, \$281.75 Interior. Minimum qualifications necessary: year of public health in school of nursing approved by N.O.P.H.N. and two years' experience, one under qualified supervision, preferably in V.N.A. or rural public health. Vacation one month, 14 days sick leave, 38 hour week. Apply directly to Director, Division of Public Health Nursing, Box 1931, Juneau, Alaska.

**Sanitariums wanted:** Salary range \$265-\$300 month. Possibility of advancement to higher classification. Minimum requirements 2 years' college work with courses in the sciences related to public

health or approximately equivalent experience in field of environmental sanitation. Three months' course in public health is obligatory. Write Alaska Merit System, Box 201, Juneau, Alaska.

**Health Education Consultant wanted:** Salary \$300-\$345 month. Minimum requirements college degree and 1 year graduate work in public health. Experience: 1 year full-time paid employment in any of the fields of public health education. Write Alaska Merit System, Box 201, Juneau, Alaska.

**Positions Available in Delaware:** 2 County Health Officers, Director Tuberculosis Control, Director Venereal Disease Control, Physical Therapist, Occupational Therapist, Medical Social Worker. Experience and advanced training in public health essential in medical positions. For information write to Dr. Edwin Cameron, State Health Officer, Dover, Del.

**Wanted:** Medical Director, Municipal Tuberculosis Hospital, bed capacity 115. One with knowledge of surgery preferred. Permanent, full-time. Salary \$4,200 with full maintenance. Apply Box 583, Fall River, Mass.

**Wanted:** Medical officers needed for several openings in California, physicians to direct maternal and child health programs or venereal disease control work, and to assist local health officers. Requires license to practise in California. Salary \$4,800 year. Also opening for District Maternal and Child Health Medical Officer with training in pediatrics or obstetrics and public health. License to practise in California required. Salary \$4,800 year. Apply to State Department of Public Health, Room 612, Phelan Building, 760 Market Street, San Francisco 2, Calif.

### POSITIONS WANTED

**Bacteriologist,** age 31, B.A. and M.S. at State University of Iowa. Six years' experience in bacteriology and public health. Seeks teaching fellowship to finish Ph.D. degree. L-479

**Research bacteriologist,** Ph.D. 1941, Sanitary and Food Bacteriology, just released from active duty in Sanitary Corps, wishes position with university or commercial laboratory. Especially interested in water and sewage treatment and purification and in food, bottling and distilling industries. L-478

**Physio-therapist,** registered and licensed New York State, long experience, best

references, seeking connection with doctor or institution. Call University 4-2305 or write Joseph A. Freiman, 514 W. 114th St., New York 25, N. Y.

**Public Health Engineer,** age 40, associate member ASCE, shortly to be released from armed forces desires position in public health or sales engineering. E-486

**Senior Bacteriologist,** 11 years' experience, 4½ years as U. S. Army laboratory officer with experience in dysentery and malaria and practical work in war bacteriology, tropical diseases, etc., seeks position anywhere in the U. S. L-480

Statistician and registrar of vital statistics for past four years in large city wishes to make a change. S-461

Veterinarian with 3 years' experience in army meat and milk inspection seeks position with city or state health depart-

ment. Well qualified in animal disease control. M-461

Sanitary or public health engineer, age 26, M.S. Harvard, seeks position in northeastern U. S. Experience with U. S. Public Health Service and as sanitary inspector. E-487

### Advertisement

## Opportunities Available

WANTED—(a) Public health physician well trained in cancerology to direct program for cancer control; should be capable public speaker and able to qualify for teaching appointment on faculty of university medical school. (b) Public health physician to become associated with city department of health located in one of the United States dependencies; agreeable climate because of trade winds; English prevailing language; excellent opportunity for developing own private practice. PH1-1 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Public health nurse to supervise outpatient department of teaching hospital; in addition to administrative work would be required to carry out teaching programs for students assigned to outpatient department; position carries faculty appointment with university; \$2,400–\$3,000. (b) Several staff nurses; municipal department of health; Pacific Northwest; Senior salaries \$190–\$230. Junior salaries \$160–\$200. (c) Counselor; registered nurse to serve as counselor in Michigan Avenue office (Chicago) of nationally known company; approximately 300 employees, mostly young women about 30 years of age; duties include first aid; five day week; minimum starting salary, \$160; plans for industrial department later on. (d) Clinical instructor with public health experience to conduct public health program in school of nursing, hospital of rather large size; New England. (e) Public health nurse; mining community located in most beautiful part of Pacific Northwest; excel-

lent hospital facilities; \$200–\$225. (f) Public health supervisor; cancer service, county health program; preferably someone skilled not only in care of patients but qualified also to present educational side of cancer program; organization works closely with health organizations in three major cities and with several hospitals conducting cancer clinics; East. (g) Several nurses for industrial dispensary; large industrial company; \$200; South. PH1-3 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Director of Public relations for one of the national professional organizations; duties include writing speeches, directing publicity of the annual meeting, preparing press releases; advantageous if candidate has had experience in handling public relations in allied fields such as public health; opportunity for developing into important position. (b) Health educator to establish cancer prevention program and ultimately become executive secretary of municipal tuberculosis and health association; residential town short distance from New York City. (c) Health educator for city department of health; capable organizer required; salary around \$3,000. (d) Health educator or social worker to take charge of family relations department; department of health large city in the Southwest; would work closely with the school board; immediately. PH1-2 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

### Advertisement

## Opportunities Wanted

Health educator is available; A.B., M.S., Ph.D. degrees; several years' successful experience; eight years' teaching experience; six years, director, department health education, large industrial company; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public Health nurse is available for executive appointment; bachelor of science and master of public health degrees; state university; eight years' executive industrial nurse, large industrial company; two years, executive public health nurse; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist is available for teaching or public health position; A.B., M.S., Ph.D. degrees; twelve years' academic experience during which time he served as professor and head of the department of bacteriology in a university medical school for eight years; past several years, director of research with one of the

foundations; for further details, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young dentist, Veteran World War II is available for position in industrial dentistry; degrees from leading schools; several years' teaching experience; two years, supervisor of large dental clinic; assignment with Army has been chief of dental service, consisting of supervision of six dental clinics; for further information please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Well trained public health physician is available for an appointment of administrative character; A.B., M.D., M.P.H. degrees, leading schools; several years, epidemiologist, state department of health; past four years has held important administrative appointment with large teaching institution; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### THE PRESIDENT'S HEALTH MESSAGE

On November 19, President Harry S. Truman presented to a joint session of Congress a comprehensive health message—the first message of any President to deal thus completely with the broad problems of national health and the means for their solution—in fact, it has been said to be the first presidential health message of any kind to Congress. He said in part: “We should resolve now that the health of this nation is a national concern; that financial barriers in the way of attaining health shall be removed; that the health of all the citizens deserves the help of all the nation.”

The President outlined five unmet problems and sketched, in principle, the means for their solution. These are:

1. The distribution of physicians in the United States is grossly uneven and is matched by inequalities in hospitals and other health facilities. About 1,200 counties representing 15,000,000 persons have either no local hospital or none that meets the minimum standards of professional associations; 31 counties, each with more than a thousand inhabitants, in 1940 had not a single practising physician. In the nation as a whole the proportion of physicians to population is as favorable as anywhere in the world. The disparity of their distribution is due to lack of adequate facilities for medical treatment and to the low income levels in many communities which make it difficult and often impossible for doctors to make a living. He suggests that the 60,000 doctors and tens of thousands of other professional personnel now being demobilized from the armed forces cannot be assigned, but must be attracted to communities by adequate facilities for

the practice of medicine and by assurance of economic security.

The President recommends that the federal government provide financial and other assistance for the construction of needed hospitals, health centers, and other medical, health, and rehabilitation facilities. It should be possible to meet deficiencies in hospital and health facilities so that modern services—for both prevention and cure—can be accessible to all the people.

2. There is need for the development of local public health services and maternal and child care. Although some 18,000 local governmental units have responsibility for health service, nevertheless 40,000,000 citizens, a large majority of them in rural areas, live in communities lacking full-time local public health service. At the present rate of progress it would take more than a hundred years to cover the whole nation. We are only beginning to realize our potentialities in achieving physical well-being for all our people.

To develop full-time public health services throughout the nation the President recommends an extension of the present federal-state coöperative relationships whereby states and localities receive financial aid for local services. These services should be financed by states and localities, and federal grants should be in proportion to state and local expenditures and should bear some relation to the financial ability of the states.

3. The third basic problem concerns medical research and professional education. Research can do much to develop ways to reduce those diseases of body and mind which now cause most sickness, disability, and premature



death. And research can do much toward teaching us how to keep well and how to prolong healthy human life. More coördinated research is needed on the cause, prevention, and cure of cancer, for example, which currently causes 160,000 deaths a year. There is also special need for research on mental diseases and abnormalities. Mentally ill are estimated to number two million; they occupy half of the existing hospital beds, at a cost of about \$500,000,000 a year; 125,000 new mental cases are admitted to institutions annually. He says further that the money invested in research pays enormous dividends. If anyone doubts this, let him think of penicillin, plasma, DDT, and new rehabilitation techniques.

Professional education and medical research should be strengthened where necessary through federal grants-in-aid to public and to non-profit private agencies and institutions.

4. The high cost of individual medical care is the principal reason why people do not receive the medical care when they need it. This is true not only of needy persons but for a large proportion of normally self supporting persons as well. At present part of this deficiency is being met, particularly in rural areas, by the kindness or private charity of the individual physician, who should not be expected to carry so heavy a load. The President estimated that on the average 4 per cent of the national income is absorbed for medical care. He suggests therefore distributing the costs through expansion of the compulsory insurance system, operating on the well developed insurance principle of spreading the risk of any unforeseeable personal or family calamity—fire, burglary, sickness.

As to the organization and administration of such a system, the President says medical services are personal. Therefore, the nation-wide system must

be highly decentralized in administration. The local administrative unit must be the keystone of the system so as to provide for local services and adaptation to local needs and conditions. Locally as well as nationally, policy and administration should be guided by advisory committees in which the public and the medical professions are represented.

He further stresses the continued personal relationship between patient and doctor under such a system, the enlargement of free choice of physicians by the removal of financial barriers, and the free choice by physicians to practise within or without the system.

5. The fifth problem has to do with loss of earnings due to illness. On an average day about 7,000,000 persons are so disabled by sickness or injury that they cannot go about their usual tasks. Of these, about 3,250,000 are persons who would otherwise be working or seeking employment. Every year four or five hundred million working days are lost from productive employment because of illness and accident—about forty times the number of days lost because of strikes, on the average, during the ten years before the war.

A comprehensive health program must include the payment of benefits to replace at least part of the earnings that are lost during the period of sickness and long-term disability. This protection, according to the President, can be readily and conveniently provided through expansion of the present social insurance system, with appropriate adjustment of premiums.

From the newspaper comment we quote from the *New York Times* editorial of November 21:

"The President's message on a five-point health program deals thoroughly with the medical implications of the Social Security Act. Evidently to offset opposition, fully a third of the message argues persuasively for the better distribution of medical care and

the reduction of its cost and dwells on the inappropriateness of the term 'socialized medicine' when beneficiaries of medical insurance pay their own premiums and choose their own doctors in accordance with tradition. We have, then, both a message to Congress and an educational document which should blow away much of the fog of controversy.

"The plans outlined by the President are ambitious and far-reaching. Nowhere in the world is there anything quite like his proposed integration of hospitals and medical centers built and operated at public expense with health service, physicians, maternal and child care, dentistry, medical education and research."

The *New York Herald Tribune* of November 21 says editorially in part:

"President Truman's message on national health was, in the first place, a comprehensive and impressive survey of the strength and weakness of medical care in the United States. Few would attempt to dispute the reality of the problems he set forth or the challenge they present to a powerful and wealthy nation. Moreover, the President showed an obvious concern lest a national health program become too unwieldy, over-centralized, bureaucratic. He emphasized continually the need for local administration, for the utmost in voluntary coöperation, for as much flexibility as possible. The President's message deserves the most careful study because of the magnitude of the problem with which he seeks to deal and the thoughtful attention he has given it."

#### DR. CUMMING COMPLETES 25 YEARS WITH PAN AMERICAN SANITARY BUREAU

On December 20, 1945, Dr. Hugh S. Cumming, Surgeon General (Retired), U. S. Public Health Service, completed twenty-five years as Director of the Pan American Sanitary Bureau, the official health organization of the American Republics and the oldest international health body in the world. When Dr. Cumming retired from the Public Health Service in January, 1936, he did not give up his interest in public health, but decided to devote himself to improving inter-American health conditions and good will through

his continued, full-time direction of the Pan American Sanitary Bureau. In 1920 when Dr. Cumming first assumed direction of this Bureau, available funds permitted the employment of only one clerk to collect and distribute epidemiological information. Since those early days, however, the Bureau has grown, with increased appropriations making possible an increasing participation in inter-American health work. Impetus was given to its growth by the adoption in Habana in 1924 of the Pan American Sanitary Code, "the first and only treaty to be ratified by all the American Republics." For a number of years the Bureau has been sending representatives, including physicians, sanitary engineers, laboratory workers, entomologists, nurses, etc., to Latin America to give advice and assistance to the different republics in their health problems, and undertaking specific campaigns against such conditions as plague, onchocerciasis, venereal diseases, typhus and malaria, organizing nursing schools and hospitals, granting fellowships, and similar coöperative programs. A recommendation was made at the Inter-American Conference held at Chapultepec in February and March, 1945, that the Pan American Sanitary Bureau be given such financial aid and technical and other personnel as may be needed to promote its work of coördination and technical direction of sanitary activities of the Americas.

Dr. Cumming has been honored many times by the American Republics which have granted him the following decorations: Order of Carlos Finlay, Cuba, 1931, Order of El Mérito, Ecuador, 1931, Order of El Sol del Perú, 1934, Order of Honneur et Mérite, Haiti, 1939, Order of Boyacá, Colombia, 1939, Order of Al Mérito, Chile, 1940, Order of Mérito, Juan Pablo Duarte, Dominican Republic, 1943, Order of Eduardo Licéaga, México, 1943, Order of Mérito, Paraguay, 1945. Dr. Cum-

ming was President of the American Public Health Association in 1931.

Dr. Cumming's anniversary has been made the subject of recognition in messages from the highest authorities of the American Republics and the United States. A gold medal has recently been awarded him by the Government of Guatemala to commemorate the anniversary.

#### NEW ORLEANS ADOPTS TYPHUS CONTROL ORDINANCE

John M. Whitney, M.D., Superintendent of Public Health of New Orleans, La., has reported that the Commission Council of the City of New Orleans has adopted an ordinance aiding the rat control program. An appropriation of \$10,000 has been made for this purpose. E. B. McCrary of the Division of Pest Control of the Health Department is in charge. Copies of the ordinance may be obtained by addressing Dr. Whitney.

#### NUTRITION FOUNDATION EXTENDS RESEARCH GRANTS

Charles Glen King, Ph.D., Scientific Director of the Nutrition Foundation, Inc., New York City, has announced that the Board of Trustees at the Foundation's annual meeting in November awarded new grants of \$120,565, bringing the total since the establishment of the Foundation to \$1,041,755. Dr. James Bryant Conant, President of Harvard University, was the speaker at the annual luncheon.

Among the institutions receiving grants were Stanford University, Yale University, University of Wisconsin, University of Toronto, Tulane University, University of California, Pennsylvania State College, Cornell University, Duke University, Northwestern University, Meharry Medical College, Harvard University, University of Southern California, and Washington University.

#### AWARDS OF TYPHUS COMMISSION MEDAL

The Office of the Surgeon General, U. S. Army, Washington, has announced that the United States of America Typhus Commission Medal has been awarded to a group of officers including Lt. Colonel Wilson C. Williams, M.C., formerly State Health Officer of Tennessee, Nashville, and Captain Bernard D. Daitz, Sn.C., of New York City.

#### TROPICAL DISEASE QUARANTINE

A joint Army-Navy and Public Health Service military quarantine program will take all possible precautions against the introduction of new tropical diseases into this country through the deployment of troops, according to Lt. Col. O. R. McCoy, MC, Director of the Tropical Disease Control Division, Office of The Surgeon General, who spoke at the recent meeting of the Southern Medical Association in Cincinnati.

This precautionary program, Colonel McCoy pointed out, is carried on in addition to the preventive measures taken by the services for all troops serving overseas. Immunization and high standards of sanitation have been enforced, and the Army has taken definite steps to minimize secondary cases of malaria among soldiers already returned to the United States. The latter precaution requires that soldiers taking suppressive medication against malaria when they return to this country continue to take the drug for twenty-eight days.

Dengue, sandfly fever, and scrub typhus are limited in their course, having no recurrences, and so offer little hazard as diseases imported by returned soldiers. It has also been found that the incidence of carriers of bacillary dysentery is "extremely low" in military personnel, and that the chances of transmission of filariasis in the United States is very slight.

"Troops are examined," Colonel

McCoy concluded, "before departure from abroad and after arrival in this country to identify and screen out for treatment individuals who may have acquired communicable diseases during overseas service. Also new regulations have been formulated which are intended to prevent the introduction of disease through infected animals, plants or insects."

#### NEW AMERICAN STANDARD BUILDING CODE

A new American Standard giving designers data on the loads a building can carry with safety has just been approved by the American Standards Association. This marks another advance in the development of a complete series of standards in the building field and will help to answer such questions as: how strong should floors and walls be made in factories, office buildings, and theaters to prevent them from collapsing when occupied by the machinery, desks, or audiences which they accommodate? And whether it is necessary in any particular part of the country to provide especially strong construction to resist wind pressures, to withstand earthquake shocks, and to prevent collapse of roofs under the load of winter snow.

#### MICHIGAN PUBLIC HEALTH ASSOCIATION

The Michigan Public Health Association held its 25th Annual Public Health Conference in Grand Rapids November 7 to 9. The theme of the three day conference was "Reconversion," and the attendance was 610.

The following new officers were elected:

*President*—David Littlejohn, M.D., Dearborn  
*President-elect*—K. R. Gibson, D.D.S., Detroit  
*Vice-President*—H. J. Dunsmore, Battle Creek  
*Secretary-Treasurer*—Marjorie Delavan, Lansing  
*Representative on A.P.H.A. Governing Council*—Nathan Sinai, Dr.P.H., Ann Arbor

#### RESEARCH FUND FOR HEART DISEASE

A joint committee of the American Life Convention and the Life Insurance Association of America has announced the creation of a \$3,500,000 medical research fund which is being made available through the participation of 143 life insurance companies in the United States and Canada. M. Albert Linton, chairman of the joint committee, states that the first research will be planned in diseases of the heart and arteries because of the primary importance of these diseases to the public and to life insurance policy holders. He compared the deaths from heart disease during the 3½ years of war in the United States with those from combat deaths in all branches of the armed services with 1,400,000 of the former and 272,000 of the latter.

The allocation of the funds will be made by an advisory council of eight distinguished physicians and it is expected that a recognized leader in the field of medical research will be named to the post of scientific director. Annual contributions of more than \$500,000 each year are expected to raise the total sum in six years' time.

#### GENERAL SIMMONS RECEIVES DISTINGUISHED SERVICE MEDAL

On November 19, 1945, Major General Norman T. Kirk, The Surgeon General of the Army, presented the Distinguished Service Medal to Brigadier General James Stevens Simmons, USA, Chief, Preventive Medicine Service, Office of The Surgeon General, Washington, D. C. The citation which accompanied the medal read as follows:

"Brigadier General James Stevens Simmons rendered exceptionally meritorious service in a duty of heavy responsibility as Chief of the Preventive Medicine Service, Office of The Surgeon General, from November, 1939, to August, 1945. The service he organized and developed carried out a world-wide program of military and civil public health which secured both immediate and enduring bene-

fits by reducing hazards to the health of troops, civilians engaged in essential war work, and refugees and displaced persons. By applying the best available knowledge and fostering research, he developed and extended new information on the causes and prevention of communicable diseases, on the improvement of nutrition for soldiers and on the reduction or elimination of the health hazards of mechanized warfare and adherence to ideals, inspired and established a positive concept of health for troops and civilians. With extraordinary foresight, he was in advance of events, devising measures for health protection before critical needs arose; and with dynamic energy, he overcame severe difficulties. By protecting the health of the Army and conserving the health of the nation, General Simmons contributed directly to winning the war."

#### MASSACHUSETTS HEALTH OFFICERS ORGANIZE

The health officers of the North Metropolitan State Health District in Massachusetts have organized the North Metropolitan District Health Officers' and Agents' Conference intended to afford members an opportunity to discuss inter-community health problems and to exchange ideas regarding administrative practices.

Officers of the association include Francis P. Denny, M.D., Health Officer, Brookline, President; John D. Crowley, Agent, Cambridge, Vice-President; May C. Welsh, Agent, Malden, Secretary; and A. Daniel Rubenstein, M.D., District Health Officer, Consultant.

#### KOREAN PHYSICIANS STUDY PUBLIC HEALTH IN THE UNITED STATES

A group of nine physicians from Korea have begun a year of study in the field of public health under the auspices of the International Health Division of the Rockefeller Foundation, according to an announcement by the Office of the Surgeon General, U. S. Army. Three of the physicians are at the Johns Hopkins School of Hygiene, three at the Harvard School of Public Health, and

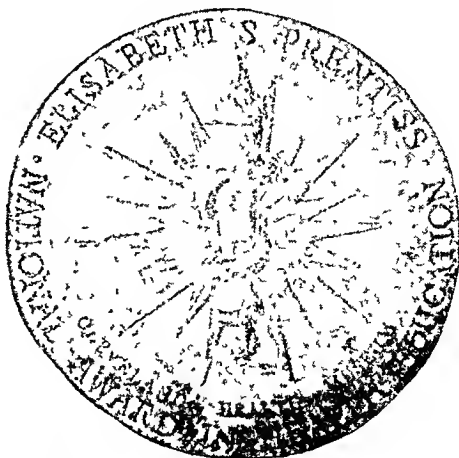
three at the University of Michigan School of Public Health. According to Major General Norman T. Kirk, the purpose of this year of training is to lay the foundation for a self-sufficient medical service for the Korean nation. For more than thirty years, according to Dr. Kirk, the Japanese have dominated all medical and other scientific work in Korea as well as its national and local government affairs. No Korean has been allowed to serve in a position of responsibility in the nation or in his own community.

#### PROFESSOR C.-E. A. WINSLOW RECEIVES 1945 ELIZABETH SEVERANCE

##### PRENTISS AWARD

Presentation of the second annual Elizabeth Severance Prentiss National Award in Health Education to Professor C.-E. A. Winslow was made at the luncheon of the fifth anniversary meeting of the Cleveland Health Museum on November 27, 1945. The redesigned award in the form of a plaque is shown. The presentation was made by radio over the N.B.C. network by Dr. James Rowland Angell, President Emeritus of Yale University, in whose medical school Professor Winslow has taught public health for thirty years.

Professor Winslow addressed the



*Elizabeth Severance Prentiss Award*

more than 600 guests at the luncheon on "Ten Unattained Goals of Public Health," among which he listed organized community health education.

The award was made possible through a grant of Mrs. Elizabeth Severance Prentiss. Its first recipients in 1944 were Mary Swain Routzahn and Edward G. Routzahn (posthumously), to whom Professor Winslow gave credit for the real accomplishments in the field of health education.

#### PUBLIC HEALTH LABORATORY DIRECTORS' MEETING, CINCINNATI

On November 10 and 11, immediately preceding the meeting of the Southern Medical Association and Associated Societies in Cincinnati, a meeting of the Conference of State and Provincial Public Health Laboratory Directors was held in that city. About half of the state laboratories, the U. S. Public Health Service, and the Department of Pensions and National Health of Canada were represented.

Many current problems of laboratories were outlined in reports of standing committees and discussions of them; and plans were made to increase the activities of the organization in the post-war period. A proposal was entertained to broaden its scope by giving greater participation to personnel of municipal, county, and other public health laboratories and a committee was appointed to draft proposed revisions of the constitution to embody these suggestions.

#### SOCIAL HYGIENE DAY

The observance of Social Hygiene Day, February 6, 1946, has special significance this year, as the impetus given the whole program of venereal disease control under wartime conditions must be maintained and the goal "the virtual eradication of syphilis and gonorrhea within the foreseeable future" realized.

The American Social Hygiene Asso-

ciation has prepared publicity materials to assist any community group in observing the occasion through meetings, radio programs, or other group activities. The folder *Beyond Victory* is free in quantity and without charge. It describes ways in which Social Hygiene Day can be made effective in your community. Order from the American Social Hygiene Association, 1790 Broadway, New York 19, N. Y.

#### A NUTRITION PROGRAM WITH THREE-WAY BENEFITS

An unusual experimental program in nutrition was recently started at Flora Stone Mather College, Western Reserve University.

Thirty-six students with a variety of difficulties—organic, physical, and neurological—are under the supervision of seven public health nurses, students in graduate courses in public health nutrition at the University. Each student has had a nutrition program prescribed to fit her individual needs, under the direction of the Professor of Physical Education, the Professor of Home Economics, and the Director of Student Health Service. The public health nurses—each from a different state department of health and one from Puerto Rico—will keep careful records of progress of the students, write a report of the program, and carry it back to their home state. Thus, this program benefits the underpar student, the graduate student in public health nutrition, and eventually, the state health department's service to the public.

#### INDIANAPOLIS HEALTH CENTER UNDER CONSTRUCTION

Under the direction of the Indianapolis Board of Health, the construction of a health center building as an adjunct to Flanner House was begun on June 13. The building will cost approximately \$105,000. With an additional \$20,000 to be spent for equip-

ment, and will contain clinic, examination and x-ray rooms, and offices for staff members. The work will be tied up with the city's slum clearance project, and, a case finding program of tuberculosis, venereal disease, antepartum medicine, infant and child health, dental and general medicine will be conducted.

#### CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Congress on Medical Education and Licensure of the American Medical Association will hold its 42nd annual meeting at the Palmer House, Chicago, on February 11 and 12.

#### UNRRA REPORTS EUROPE'S EPIDEMICS HELD IN CHECK

No communicable disease "is sufficiently prevalent as to constitute a menace to international health." This word comes from a November 26 report from the Chief of the Epidemic Control Branch of UNRRA's Health Division, Dr. G. Stuart, but with the added caution that the "hump of the difficult winter months has not yet been passed."

A summary of the status of some of the more common communicable diseases follows:

*Smallpox*—Prevalent only in Italy

*Louse-Borne Typhus*—D.D.T. has practically eliminated it from British and American zones. Serious in many parts of the Balkans and less serious in Bulgaria and Greece. Can be held in check with D.D.T.

*Plague*—Only in Malta, but remains a threat because North Africa and Palestine remain infected.

*Diphtheria*—Incidence high, especially in Germany.

*Typhoid Fever*—Greatly increased in many countries; in Germany in September it was 30 times the normal rate.

*Tuberculosis*—Greatly increased in many continental countries.

*Syphilis*—Progress made in venereal disease control in 20 years virtually wiped out by war years. Syphilis increased three- to nine-fold in most countries, twenty-fold in Germany.

*Malaria*—Epidemic in Greece; leading cause of illness in Mediterranean basin. Spraying marshland areas with D.D.T. from specially equipped planes is expected to cut the risks of malaria or eliminate it entirely in Greece within a year.

#### SOUTHERN BRANCH, A.P.H.A., ELECTS OFFICERS

The Southern Branch, American Public Health Association, met during the meeting of the Southern Medical Association in Cincinnati, Ohio, November 14 and 15, under the presidency of R. H. Hutcheson, M.D., Commissioner of Health of the Tennessee State Department of Health, Nashville.

The officers for the ensuing year include the following:

*President*—Dr. W. K. Sharp, USFHS, Richmond, Va.

*First Vice-President*—Dr. George H. Denison, Birmingham and Jefferson County Health Officer, Birmingham, Ala.

*Second Vice-President*—J. M. Jarrett, Director Public Health Engineering Raleigh, N. C.

*Third Vice-President*—Abbie Weaver, R.N., Director Public Health Nursing, State Board of Health, Atlanta, Ga.

*Secretary-Treasurer*—Dr. John W. Williams, Jr., State Director of Local Health, State Board of Health, Jefferson City, Mo.

#### COLUMBIA WILL ADMIT MID-YEAR CLASS

In response to requests, mainly from those recently discharged from the armed services, the School of Public Health of Columbia University, New York, has announced that properly qualified applicants for the Master of Public Health course will be admitted on February 4, 1946. Graduate students so admitted will be expected to spend the summer months in obtaining field experience, returning for two additional quarters of academic work late in September, according to the announcement.

#### GREEK NATIONAL TUBERCULOSIS ASSOCIATION

The Greek National Tuberculosis As-

sociation, formed in May, 1945, is now in active operation with the Regent of Greece as Patron, according to a report received from J. B. McDougall, Head of the Tuberculosis Section, Health Division, UNRRA Greece Mission, and published in the UNRRA Epidemiological *Bulletin No. 20*.

The Greek Tuberculosis Association will be the first of any in the liberated countries of Europe to become affiliated with the International Union against Tuberculosis, which in pre-war years had its headquarters in Paris. The Greek Association will encourage local medical men to do research on tuberculosis problems peculiar to Greece, such as the incidence of tuberculosis and its clinical behavior in malaria-stricken areas.

#### RED CROSS NAMES HEALTH SERVICES ADVISORY BOARD

Basil O'Connor recently announced appointment of an Advisory Board on Health Services to coördinate activities of the American Red Cross in the health field. Mr. O'Connor, national Red Cross Chairman, named as board chairman Lewis H. Weed, M.D., of Baltimore. Dr. Weed also is chairman of the medical sciences division of the National Research Council; and director, School of Medicine, Johns Hopkins University.

The committee consists of 109 men and women from 25 states and the District of Columbia, representing every specialty in the field of health. Not only physicians were appointed, but also nurses, dentists, health educators, medical and psychiatric social workers, hospital administrators, medical publicists, nutritionists, pediatricians, public health administrators, and sanitary engineers.

Three members of the advisory board will serve as general vice chairmen. They are: Roger I. Lee, M.D., Boston, Mass., John D. Lyttle, M.D., Los

Angeles, Calif., and John Romano, M.D., Cincinnati, Ohio.

#### REPRINTS FOR THE DEVASTATED MEDICAL LIBRARIES OF MANILA

In connection with its campaign to help rebuild the medical libraries of Manila which were destroyed during the Japanese occupation, the Academy-International of Medicine requests that medical authors contribute eight or ten reprints of each of their articles which have been published since 1941. They may be sent at the regular parcel post rate of sixteen cents for the first pound and eleven cents for each additional pound, care of A. B. M. Sison, M.D., Philippine General Hospital, Manila, P. I.

#### HEALTH EDUCATION INSTITUTE IN MASSACHUSETTS

The Massachusetts Tuberculosis League, in coöperation with Simmons College, announces an 8 week health education institute February 4 through March 29, designed primarily "to train assistants in health education to work under supervision in the tuberculosis associations of the state." The course is open also to any education workers in the tuberculosis field and to health workers in voluntary and official agencies of Massachusetts.

The first 5 weeks, at Simmons College, will be devoted to lectures and discussions, the remaining 3 weeks to supervised field work. Address inquiries to Massachusetts Tuberculosis League, 1148 Little Building, Boston 16, Mass.

#### AMERICAN ASSOCIATION OF PUBLIC HEALTH DENTISTS

Frank C. Cady, D.D.S., Senior Dental Surgeon of the U. S. Public Health Service is now President of the American Association of Public Health Dentists, succeeding Dr. William R. Davis of Michigan.



Dr. Cady was one of the founders of the association, is a charter member and was its first Secretary, a position he filled for five consecutive years.

Other officers elected were: Edward Taylor of Texas, President-elect; C. Ray Taylor of Michigan, Secretary; Linwood G. Grace of Pennsylvania, Treasurer, and Vern D. Irwin of Minnesota, Editor.

#### \$2,000,000 NURSES' NATIONAL MEMORIAL

Plans for a National Memorial in the District of Columbia to the heroic nurses of World War II in the form of a social center and temporary residence have been inaugurated by a distinguished group of sponsors including top-ranking officers of the Armed Forces and their wives.

### PERSONALS

#### Central States

RUTH E. CHURCH, M.D., M.S.,\* who has been Medical Director of the District Health Unit No. 7 at Washington, Iowa, for several years, has resigned to become director of the McDonough-Fulton Bi-County Health Department with headquarters in Macomb and Canton, Ill., effective December 1.

NABOTH O. PEARCE, M.D., of Minneapolis, Minn., has been appointed Tuberculosis Control Officer in the Minnesota Department of Health to direct a state-wide tuberculosis program. The work, which will be financed by a federal grant of \$100,000, will be supplemental to activities now carried on by Dr. Walter J. Marcle. Minneapolis, in the Division of Preventable Diseases, by the local health departments, and the Christ-

mas Seal organizations. The objective of the program is to discover incipient cases of tuberculosis.

#### Eastern States

MAJOR CARL R. FELLERS,\* Head, Food Technology Department at Massachusetts State College, Amherst, has returned to the United States. For 3½ years his headquarters were located at Sydney, Australia. He organized and operated three Army Subsistence Laboratories at Sydney, Melbourne, and Brisbane, and was in charge of all Army Subsistence Inspection (except animal products) in the Southwest Pacific Area.

JOHN THOMAS FULTON, D.D.S.,† has been appointed to the newly created position of Dental Services Adviser in the Division of Research and Child Development of the Children's Bureau, Department of Labor. Dr. Fulton is the technical adviser to the Bureau in the field of services to children and will devote himself primarily to research, administration, and practice in public health dentistry for children. His appointment is indicative of the continued expansion and recognition in the Bureau of the importance of dental health. Dr. Fulton was formerly Chief of the Division of Dental Hygiene of the Connecticut State Health Dept.

COMDR. LEONARD J. GOLDWATER (MC), USNR,\* has been released to inactive duty after 4½ years of active service with the Navy. During his time in the Navy, Dr. Goldwater served as Industrial Health Officer at several major naval stations including the Navy Yards at Brooklyn, N. Y., and Pearl Harbor. Dr. Goldwater will resume his position as Assistant Professor of Preventive Medicine at New York University College of Medicine.

H. F. KILANDER, Ph.D.,† has joined

\* Fellow A.P.H.A.

† Member A.P.H.A.

the staff of the National Tuberculosis Association, New York, as Associate in Health Education. He formerly was Administrative Dean at Panzer College of Physical Education and Hygiene, East Orange, N. J. During the war, he served as Regional Chief in the Industrial Nutrition Program, first in the Federal Security Agency and later in the War Food Administration.

JOHN L. LAVAN, M.D., DR.P.H.,\* has resigned as Director of Research for the National Foundation for Infantile Paralysis, New York, to join the staff of the American College of Surgeons, with headquarters for the present at 210 East 68th Street, New York, N. Y.

JAMES LIEBERMAN, D.V.M.,† of Flushing, N. Y., has recently been stationed at the Naval Medical Research Institute, National Naval Medical Center, Bethesda, Md.

ELEANOR BROWN MERRILL † of New York City, Executive Director of the National Society for the Prevention of Blindness, left in November for Montevideo, Uruguay, to attend the Pan American Congress on Ophthalmology.

RALPH S. MUCKENFUSS, M.D.,\* who commanded the first Medical General Laboratory in the European theater of operations and the European theater blood bank, has returned from military service to resume his position as Director of the Bureau of Laboratories of the New York City Department of Health. Dr. Muckenfuss had been on military leave since July 22, 1942.

EDWARD W. PALMER † has resigned from his position as Junior Master of Brighton High School, Brighton, Mass., to become Executive Secretary of the Nassau County Cancer Committee effective September 15.

WILLIAM M. SCHMIDT, M.D.,\* New York, N. Y., former Medical Direc-

tor for the New York region of the Children's Bureau, U. S. Department of Labor, is en route to Europe to supervise the health and medical services on the continent of the Joint Distribution Committee, major American agency for the relief and rehabilitation of distressed Jews overseas.

### Southern States

JOEL C. BEALL,† who has served for some years as public health engineer with Memphis and Shelby County Health Department, Memphis, Tenn., has been called to active duty as Assistant Sanitary Engineer (R) in the Division of Preventable Diseases, Typhus Control Service of the USPHS, with offices in Macon, Ga.

GEORGE B. DARLING, DR.P.H.,\* formerly President of the W. K. Kellogg Foundation, who since 1943 has been associated with the Division of Medical Sciences of the National Research Council, Washington, D. C., first as Executive Officer of the Committee on Military Medicine, and later as Vice Chairman of the division, has been appointed Executive Secretary of the National Academy of Sciences and of the National Research Council.

### CHANGES IN HEALTH OFFICERS IN FLORIDA:

SIDNEY J. WILLIAMS, M.D., M.P.H.,† formerly Director of the Pike County, Miss., Health Department, has accepted Directorship of the Southeastern Florida Health District with headquarters at Vero Beach.

FRANK L. QUILLMAN, M.D.,† has been appointed Director of the Seminole County Health Unit with headquarters at Sanford. Dr. Quillman was formerly a local health officer and lately has been Director of Venereal Disease Con-

\* Fellow A.P.H.A.

† Member A.P.H.A.

trol in the Dade County Health Department.

E. F. HOFFMAN, M.D., M.S.P.H.,† recently resigned as Epidemiologist with the State Board of Health and has accepted the position of Director of the Central Florida Health District with headquarters as Ocala. Dr. Hoffman will also direct the Northern Florida and the Southwestern Florida Health Districts, until officers have been secured for these districts.

M. ESTELLE INGOLDSBY, R.N.,† of the West Virginia State Department of Health, Charleston, has been elected Chairman of the West Virginia State Nutrition Committee.

#### CHANGES IN HEALTH OFFICERS IN KENTUCKY:

CHARLES D. CAWOOD, M.D.,\* who for some years has been Health Officer of the Lexington-Fayette County Board of Health of Kentucky, has resigned as of November 30 to enter private practice.

DR. RALPH GREGG, Sr. Surgeon, U. S. Public Health Service, has been appointed Health Officer of the City of Lexington-Fayette Co. Health Department effective December 1, succeeding CHARLES D. CAWOOD, M.D.,\* resigned.

COLONEL JOHN B. YOUNG, M.C., A.U.S., Assistant Director of the Civil Public Health and Nutrition Division, Office of the Surgeon General, Washington, has recently returned from a 3 months' stay in Europe as chief nutrition consultant.

#### Western States

HYRUM L. MARSHALL, M.D.,† Professor and Head of the Department of Public Health and Preventive Medicine, has been named Acting Dean of the University of Utah School of Medicine, Salt Lake City.

\* Fellow A.P.H.A.

† Member A.P.H.A.

#### CHANGES IN HEALTH OFFICERS IN OREGON:

ROBERT W. RIPLEY, M.D.,† has resigned as Health Officer of Corvallis to accept a position in the Connecticut State Department of Health.

WILLIAM T. EDMUNDSON, M.D., Newberg, has been appointed Health Officer for Hood River County to succeed DR. CECIL W. MCCAIN, of Hood River, resigned.

EDWARD L. VAN AELSTYN, M.D.,† of Price, Utah, has been appointed Director of the Cowlitz and Wahkiakum Counties Health Departments in Washington State, succeeding DR. THOMAS H. BIGGS, who resigned recently to devote his time to private practice.

#### Foreign

SIR JOHN BOYD ORR,\* of Bucksburn, Aberdeenshire, Scotland, a member of the British Parliament, has been elected Director General of the Food and Agriculture Organization which will have temporary offices in Washington, D. C.

COL. GEORGE M. POWELL, M.C., is the new Assistant Chief Health Officer of the Panama Canal, succeeding COL. ALBERT R. DREISBACH, M.C., whose reassignment in June terminated a seven month tour of duty on the Isthmus.



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## The Rh Factor, Vitamin K and Rubella Virus in Relation to Infant Mortality and Morbidity\*

EDITH L. POTTER, M.D., PH.D.

*Department of Obstetrics and Gynecology, The University of Chicago and the Chicago Lying-in Hospital, Chicago, Ill.*

WITHIN the last few years several discoveries have contributed to the better understanding of conditions affecting the fetus and newly-born infant. Among the most important of these have been: (1) the discovery of the Rh factor and its relation to erythroblastosis fetalis, (2) the discovery of vitamin K and its relation to hemorrhagic disease of the new-born, (3) the recognition of the harmful effect on the embryo of a rubella infection during the early months of pregnancy.

Until very recently, the etiologic agents responsible for erythroblastosis, hemorrhagic disease, and malformations have been unsuspected in spite of the fact that these conditions have long been recognized clinically. Now the first two groups and part of the last can be added to the pathologic states of the fetus for which causes are known.

ERYTHROBLASTOSIS FETALIS  
Erythroblastosis fetalis has been

recognized for many years as a disease characterized by excessive destruction and abnormal production of red blood cells.

It has recently been suggested that the name be changed to hemolytic disease of the new-born, inasmuch as hemolysis is the underlying disturbance responsible for the symptom complex. This name has several advantages, and its use may be advisable, since at times the term erythroblastosis has been applied to any disturbance, regardless of etiology, in which there is unusual erythropoietic activity. The principal drawback is the similarity to "hemolytic anemia" which is used to designate an anemia characterized by increased fragility of erythrocytes. The name erythroblastosis will be retained in this paper.

The excessive hemolysis and the resulting abnormal erythropoiesis are manifested in the living infant by anemia, jaundice, and the presence of immature red blood cells in the circulation. At necropsy they are shown by foci of erythropoiesis in abnormal loca-

\* Special Review Article prepared at the request of the Editorial Board.

tions throughout the body, and by deposits of blood pigment in the liver, spleen, and kidneys.

Although all of these manifestations are ordinarily present in infants suffering from erythroblastosis, the various clinical varieties of the disease are dependent upon the relative severity of individual symptoms. The most severe form is commonly known as the hydropic type, since marked generalized anasarca and pleural and peritoneal effusions are the outstanding feature. The anemia is usually more profound than in any other form; erythroblastemia and abnormal erythropoiesis are more excessive. Hydropic infants are frequently stillborn, and if born alive rarely survive more than a few hours.

The icteric form, commonly known as icterus gravis, shows much variation in severity. These infants frequently have an intense and startling jaundice. Although rarely present except in a very mild degree at the time of birth, it subsequently becomes rapidly progressive and assumes a most characteristic hue at 36 to 48 hours. Erythroblastemia is usually present at birth and anemia is ordinarily demonstrable then, or within a short time. The general prognosis is dependent upon the rapidity with which anemia and jaundice appear and the extent to which they progress. The present outlook for some of these infants is hopeless, regardless of treatment; some will survive if given correctly timed transfusions of proper blood in adequate amounts, and some will survive without treatment.

The type in which the anemia is the most prominent symptom and in which jaundice and erythroblastemia are mild or absent has been frequently known as idiopathic anemia of the new-born. These infants make up relatively few of those who have heretofore been included under the diagnosis of erythroblastosis and it is probable that this form of the disease commonly escapes

recognition. It is the most benign form, and although an occasional infant may require a transfusion, the majority will respond to iron and liver therapy and few will die even without treatment.

Until 1941 when Levine and his coworkers<sup>1</sup> recognized the importance of the Rh factor in relation to erythroblastosis, nothing was known of the cause of this condition and there was difference of opinion as to whether the abnormal regeneration or the degeneration of blood cells was the primary disturbance. It has now been definitely established that the disease is a hemolytic anemia generally due to maternal immunization to the Rh factor.

In 1940 Landsteiner and Wiener<sup>2</sup> reported that rabbits injected with the blood of rhesus monkeys developed agglutinins which reacted not only with rhesus blood but with the bloods of approximately 85 per cent of human beings as well. The human cells which were clumped by the rabbit serum were considered Rh positive (Rh+) and those not clumped, Rh negative (Rh-). The antibodies causing the clumping were known as anti-Rh agglutinins.

Levine and Stetson (1939)<sup>3</sup> had previously reported an unusual agglutinin in the blood of a woman giving birth to an infant with erythroblastosis, and in subsequent investigations the similarity of the anti-Rh agglutinin produced in rabbits to an agglutinin frequently found in the blood of women bearing infants with erythroblastosis was established. Wiener and Levine, each with his coworkers, and numerous other investigators have, since that time, corroborated the original observations and added much additional information.

All individuals are born Rh+ or Rh- and remain the same throughout life. The Rh character is inherited in a simple Mendelian manner, with the positive gene dominant over the nega-

tive. It is consequently possible for two Rh+ individuals to have an Rh— child, but impossible for two Rh— individuals to have an Rh+ child. This fact is of importance in determining possible parentage.

Anti-Rh agglutinins are never normally present, but can be produced in some Rh— individuals by the introduction of Rh+ cells into the circulation. If an Rh— person of either sex is transfused with Rh+ blood, and especially if several transfusions are given, agglutinin formation may be stimulated. In an Rh— woman, pregnant with an Rh+ fetus (Rh+ gene inherited from an Rh+ father) agglutinins may be produced by the passage of the Rh+ fetal cells through the placental villi into the maternal circulation. Agglutinins which are present in the maternal blood either as a result of transfusions or pregnancy may pass through the placenta and cause agglutination and hemolysis of the red blood cells of the fetus. The changes characteristic of erythroblastosis result.

When agglutinins have once been produced they persist or are reformed during each pregnancy so that all subsequently conceived Rh+ fetuses will suffer from erythroblastosis. Agglutinins may be present in the blood of the mother and may affect the fetus even though they cannot be demonstrated by laboratory tests. Several investigators have recently reported that the blood of some immunized women contains an inhibiting substance which interferes with the *in vitro* action of the agglutinins. It is possible that the presence of the inhibitor substance is a sign of extreme immunization and may explain why the women whose fetuses are most severely affected are often those in whom anti-Rh agglutinins have previously been undemonstrable.

Many important facts have been established in the last five years concerning the relation of the Rh factor to

erythroblastosis. In approximately 10 per cent of all pregnancies, an Rh— woman bears an Rh+ child. Erythroblastosis occurs in about 0.3 to 0.4 per cent of new-born infants, or once in every 30 to 40 pregnancies where the wife is Rh— and the husband is Rh+.

Over 90 per cent of all women with infants suffering from erythroblastosis are Rh—. The seeming occurrence of the disease in the 10 per cent who are Rh+ may be explained by:

1. Sensitization to—
  - a. one of the Rh subgroups
  - b. Hr, a rare antigenic substance genetically related to Rh
  - c. A or B antigens (still not conclusively proved)
2. Error in diagnosis of the disease
3. Error in performing the Rh tests
4. Some as yet unknown cause

Erythroblastosis seldom occurs in a first pregnancy except when an Rh— woman has had one or more previous transfusions of Rh+ blood. In those rare cases where it does occur in the absence of a previous transfusion or pregnancy the disease is usually mild. After it once occurs all subsequently conceived Rh+ fetuses will be affected, all Rh— fetuses will escape. The disease frequently, but not invariably, becomes more severe with succeeding pregnancies; when a woman has once lost a child from erythroblastosis the majority of subsequently born Rh+ children also fail to survive; a child who does survive may show evidence of brain damage. The number of Rh— children conceived in subsequent pregnancies by women who have given birth to one infant with erythroblastosis is much lower than would be expected if 55 per cent of the husbands were heterozygous for the Rh factor\*; it has

\* The estimated genotypic ratio in a population mating at random is 37.54 per cent RhRh; 47.46 per cent Rhrh; 15.00 per cent rhrh. Among those who are phenotypically Rh+ the ratio is 44.7 per cent RhRh; 55.3 per cent Rhrh. In a random population of Rh— (rrhh) women married to Rh+ men (Rhrh or RhRh) 27.65 per cent of the offspring should be Rh— (rrhh).

been suggested, therefore, that the homogygous Rh+ state of the father is associated in some unknown way with the initial production of the disease.

There is no known method of preventing erythroblastosis. The only treatment of value is symptomatic and consists principally in giving transfusions of Rh- blood to tide the infant over the period when it is destroying its own Rh+ cells. The recent suggestions that Rh+ cells are preferable to Rh- are not supported by adequate clinical observations, and the best evidence at the present time indicates that Rh- blood gives more favorable results. Only when Rh- blood is unobtainable should resort be had to Rh+ blood. Intraperitoneal or intramuscular administration of blood is without value. Iron and liver are of value in promoting the production of new erythrocytes, and general supportive treatment should be used as indicated.

When it becomes necessary to transfuse any Rh- individual, Rh- blood should always be used if possible. It is imperative that Rh- women who have given birth to infants with erythroblastosis receive Rh- blood, but since immunization may occur in either sex from multiple transfusions, it would be safest never to transfuse any Rh- individual with Rh+ blood. An additional problem presents itself in relation to transfusion of the female. It is possible for transfusions given in childhood or young womanhood to produce immunization and prevent an Rh- woman from ever bearing normal children by an Rh+ man. Unless generalized Rh testing becomes possible the increasing use of transfusions, as a result of the greater availability of blood in blood banks, is certain to result in an increasing incidence of erythroblastosis.

The Rh antigen was originally thought to be a specific uniform substance whose presence could be de-

tected by the use of a single anti-Rh agglutinin either human or animal in origin. It has since been shown to consist of several component parts. At least 8 variations in the antigenic nature of the Rh substance have been described, all believed to be allelic in character. They can be demonstrated by the use of three different anti-Rh agglutinins.

The agglutinins produced in rabbits and the type most commonly found in human beings clump the red blood cells of about 85 per cent of the white population of the United States, England, and Australia. Agglutinins have been observed, however, which show some variability in the percentages of bloods whose cells they agglutinate; outstanding among these are two types of sera which react with only 30 per cent and 70 per cent of bloods respectively. For the most part, cells which are agglutinated by the 30 per cent serum are also agglutinated by that giving a 70 per cent reaction, and the cells reacting with the 70 per cent serum usually react with the 85 per cent serum, while those which fail to react with the 85 per cent serum are also usually negative with the other two. If this were uniformly true all bloods could be divided into 3 Rh groups; unfortunately there are occasional variations, so that at least 8 groups must be recognized.

The occasional variables are of much less practical importance than they are of theoretic interest. For practical purposes an individual can be classified as Rh+ or Rh- according to the reaction of his or her cells to the standard anti-Rh serum. It is only important to remember that of two individuals who react positively to the 85 per cent serum, one may react positively to one or both of the other two sera, while the other may react negatively to one or both. In the case of the latter individual it might be possible for sensitization to occur from the introduction into

his circulation of blood which is positive to one of the sera to which his own blood reacts negatively; i.e., in spite of the fact that he is Rh+ to one serum an individual may still develop Rh antibodies against a portion of the Rh complex which he lacks, and consequently can be positive for one Rh antigen and at the same time possess antibodies against another Rh antigen.

The question has been raised concerning the desirability of discouraging marriage between Rh— women and Rh+ men. In one state legislature there has already been a bill proposed to make such marriages illegal, and at least one judge has found the inability of a couple to have children because of Rh incompatibility sufficient ground for divorce.

It is extremely difficult to arrive at an accurate figure for the incidence of erythroblastosis. During the last five and one-half years, 19,000 infants have been born at the Chicago Lying-in Hospital. Thirty of the deaths and 20 of the stillbirths were believed due to this condition, making the incidence of fatal cases approximately 1 in 380 births.

It has been suggested that the incidence is somewhat high because of the nature of the cases treated at this hospital, but in spite of this our incidence is lower than that reported from some other institutions and it seems a conservative figure.

In the United States in 1943 there were 2,934,860 births and about 78,485 stillbirths, making the total number of reported births slightly over 3,000,000. If the mortality from erythroblastosis was the same throughout the country as at the Chicago Lying-in Hospital, approximately 8,000 babies in the United States died during 1943 from this disease. In addition to those who died there were probably many of those who survived who were permanently handi-

capped by brain damage incident to the disease.

At least 90 per cent of the cases of erythroblastosis could be prevented if there were no matings between Rh— women and Rh+ men. The question to be decided is whether this potential salvage would compensate for the time, money, and personal sacrifice involved in universal Rh testing and prohibition of marriage between persons of incompatible blood groups.

It is extremely important that the cause of death be ascertained in every infant who is stillborn or who fails to survive. If erythroblastosis exists further attempts at childbearing on the part of that mother cause a needless physical, emotional, and economic loss. To condemn a woman to a barren existence, however, because of an erroneous diagnosis of erythroblastosis is as grievous a fault as allowing her to continue to bear dead infants. At the present time erythroblastosis frequently goes undiagnosed even in the presence of typical symptoms, and, on the other hand, is commonly indicted as a cause of death on inadequate grounds. Improved diagnostic acumen is needed both by clinicians and pathologists.

#### HEMORRHAGIC DISEASE

Hemorrhagic disease is a condition about which there has been much debate since it was first described by Townsend<sup>4</sup> in 1894. He defined it as spontaneous external or internal bleeding occurring in new-born infants, unrelated to trauma, accident, or definite disease. Since that time this same definition has been widely used but has been variously interpreted by different investigators. Many have included infants with intracranial hemorrhage, and some have included many infants with severe asphyxia at birth. Others have excluded both of these groups, contending that intracranial hemorrhage is usually traumatic



and that the presence of asphyxia is directly contributory to hemorrhage. Such investigators have usually included as having hemorrhagic disease only infants with bleeding under the skin, into the gastrointestinal tract or other abdominal or thoracic viscera. The contention on the part of those who have included a wider variety of hemorrhage has been that although trauma or asphyxia might be responsible for a certain amount of bleeding, a coexisting hemorrhagic tendency might increase mild bleeding into a fatal hemorrhage.

Rodda<sup>5</sup> in 1920 reported that infants with hemorrhagic disease exhibited a prolonged bleeding and clotting time and believed this could be shortened by the intramuscular administration of whole blood. He recommended the routine testing of bleeding and clotting time in order that infants manifesting these conditions might be treated and bleeding prevented.

Dam's discovery of vitamin K and the establishment of its relation to blood coagulation gave new impetus to the study of hemorrhagic disease. With the introduction of adequate methods for determination of prothrombin time, several investigators reported that infants with hemorrhagic disease had a marked prolongation of prothrombin time and that the administration of vitamin K caused a decrease in prothrombin time and a cessation of hemorrhage. It also soon became evident that although the prothrombin time is normal in almost all infants at birth it often becomes gradually prolonged and reaches a maximum on the second or third day of life. The prothrombin time subsequently becomes shortened and is ordinarily again normal by the end of the first week. It was also learned that by administering vitamin K to the mother during labor or to the infant immediately after birth, this prolongation of prothrombin time could generally be prevented.

As a consequence, the recommendation was made that vitamin K be given to all pregnant women during labor, or for days or weeks prior to delivery, and to all infants immediately after birth. Many investigators were extremely enthusiastic in their prophecies regarding the saving of life that would follow its generalized use. It was suggested that hemorrhage as a cause of death would become almost a thing of the past.

One of the first dissenting voices was that of Sanford,<sup>6</sup> who, with his co-workers, reported no decrease in hemorrhagic manifestations among 800 infants who received vitamin K immediately after birth. Parks and Sweet<sup>7</sup> gave vitamin K to 2,000 women during labor with no reduction in stillbirth and neonatal mortality rates. At the Chicago Lying-in Hospital<sup>8</sup> over a 2 year period, 6,000 women were given vitamin K. The fetal and infant mortality during those years was compared with that during the subsequent two years when the vitamin was not given and no difference was found. Lehman<sup>9</sup> has recently reported that, of 13,000 infants who received vitamin K after birth, the mortality from hemorrhage among those born alive at term was reduced 1.6 per 1,000 in comparison to a group of 17,000 who did not receive the vitamin.

Most of the series of cases in which mortality rates appeared to have been appreciably decreased by the use of vitamin K were relatively small and at the present time most of the evidence seems to indicate that little saving of life in the new-born period can be expected from the routine administration of vitamin K to mother or infant.

It appears, however, to have value in the treatment of gastrointestinal hemorrhage, and should be given any infant with such bleeding without delay. Moreover, it should be administered to any infant with demonstrable or suspected bleeding on the possibility

that the prothrombin time may be prolonged.

It may be concluded that occasional infants show spontaneous hemorrhages which are associated with a prolonged prothrombin time and that such hemorrhages will cease when the administration of vitamin K has brought the prothrombin time to a normal level. Hemorrhages due to any other cause are unaffected by vitamin K. The routine administration as a prophylactic procedure does not seem warranted.

#### RUBELLA AND CONGENITAL MALFORMATIONS

The fact that viruses are easily propagated in embryonic tissue has been known for many years, but not until Gregg<sup>10</sup> in 1942 found an association between rubella in early pregnancy and congenital defects of the eyes and heart, was it recognized that virus diseases might be the cause of certain human malformations.

Gregg reported 78 infants with congenital cataracts, all but 10 of whose mothers gave history of rubella during early pregnancy. The majority of these infants were small, poorly nourished, and were difficult to feed. In all but 16 the cataracts were bilateral and in at least 44 there was some evidence of a cardiac malformation. All were born in Australia and most of the mothers had been exposed to rubella during a single epidemic.

The apparent relationship between rubella in early pregnancy and the presence of congenital cataracts in the new-born aroused immediate interest in the problem in Australia and, under the auspices of the National Health and Research Council, Swan and his co-workers<sup>11</sup> began a widespread investigation. They were able to locate 57 infants whose mothers gave a history of some exanthematous disease during pregnancy. Of 25 women who had had rubella in the first 2 months of preg-

nancy, all offspring suffered some type of malformation; malformations were also present in 4 infants of 8 women who had had the disease in the third month, and in only 2 of 12 who had had it later. In the total group there were 14 infants with eye defects (all but one of which were cataracts), and of these, 9 also had heart lesions, 3 were mentally defective, and 1 had a club-foot. In all there were 17 infants with heart defects, 6 of whom were otherwise normal. There were 4 infants with cataracts in whom there was no history of maternal infection.

In a subsequent paper, Swan and his co-workers<sup>12</sup> reported 13 additional women affected with rubella in the early months of pregnancy, 11 of whose offspring had congenital defects. These consisted largely of cataracts, microcephaly, and deaf mutism. In 1944 Reese,<sup>13</sup> Rones,<sup>14</sup> and Erickson<sup>15</sup> each reported a few cases in the United States similar to those observed in Australia. Reese recorded 3 cases of congenital cataracts, all associated with cardiac disturbances, in infants whose mothers had had rubella in early pregnancy. Rones reported 2 infants with congenital cataracts whose mothers had had the infection during the second month of pregnancy, 2 with glaucoma where the infection had occurred during the third month. Erickson observed 10 infants with cataracts and 1 with microphthalmia. Ten mothers had had rubella in the first 2 months of pregnancy, 1 at 2½ months. Nine appeared to have congenital cardiac defects.

At a meeting of the New South Wales Branch of the British Medical Association in December, 1944, another manifestation of maternal rubella was discussed. Carruthers<sup>16</sup> stated that, with the help of the health department, 147 infants with congenital malformations had been found, and that of these 116 were deaf. Among the 102 born to women with definite histories of rubella

in early pregnancy, 74 were deaf-mutes and 14 gave evidence of congenital heart disease. He described in detail 17 infants with deaf-mutism who were under his own care. None had heart lesions or cataracts. Eleven were physically stunted and 3 were microcephalic.

Gregg<sup>17</sup> at the same meeting also reported having examined several infants who were deaf-mutes but who lacked evidence of ocular defects, and stated that he had previously reported 8 infants who had been observed after the publication of his original paper. All had eye disturbances and additional abnormalities had consisted of heart disease in 6, and deafness in 3.

In discussing the papers by Caruthers and Gregg, Vickery<sup>18</sup> presented data on 21 infants with variable degrees of deafness. Twenty mothers had had rubella (and the other was presumed to have had it) during the first 3 months of pregnancy. Thirteen gave evidence of congenital heart disease; all were nervously unstable, but none had eye defects.

Dr. E. S. A. Meyers at the same meeting commented on the fact that over 200 children had been made defective by a single epidemic of rubella (78 cases reported by Gregg and 145 more collected by the Health Department of New South Wales).

It appears that three principal defects are to be found in children whose mothers have had rubella during early pregnancy. These consist of cataracts involving the central part of the lens, ear defects producing deaf-mutism because of the almost complete loss of hearing occasioned by a sacculo-ocular type of degeneration, and cardiac disturbances due to interventricular defect, or patency of the ductus arteriosus.

Almost all women with rubella in the first two months of pregnancy give birth to defective children; when the disease occurs later the infant is less prone to

be affected, but eye defects have followed its occurrence in the third month, and ear defects its occurrence in the fourth month.

Almost all of the cases reported from Australia have been associated with epidemics of rubella. The relatively few cases reported from any other country may indicate either that within recent years the disease has not occurred in epidemic form among young adults or that the perspicacity of the Australian investigators has led them to make an association between maternal rubella and congenital defects in the offspring which other observers have overlooked.

If a single epidemic in Australia produced more than 200 defective children, the prevention or control of similar epidemics in other parts of the world becomes a challenge to all individuals interested in public health.

#### CONCLUSION

The discovery of vitamin K, the recognition of the Rh factor, and the establishment of the relation of the rubella virus to malformations, constitute important advances in knowledge concerning conditions affecting the fetus during the intrauterine period and the early days of life. All of these discoveries are excellent examples of the spectacular results which may follow the correlation of fundamental observations with clinical problems. They point the way for further advances and illustrate the necessity for the close integration of all fields of scientific investigation.

#### REFERENCES

1. Levine, P., Katzin, E. M., and Burnham, L. Isoimmunization in Pregnancy: Its Possible Bearing on the Etiology of Erythroblastosis Foetalis. *J.A.M.A.*, 116:825 (Mar. 1), 1941.
2. Landsteiner, K., and Wiener, A. S. An Agglutinable Factor in Human Blood Recognized by Immune Sera for Rhesus Blood. *Proc. Soc. Exper. Biol. & Med.*, 43:223, 1940.
3. Levine, P., and Stetson, R. Unusual Case of Intra-Group Agglutination. *J.A.M.A.*, 113:126 (July 8), 1939.

4. Townsend, C. W. The Haemorrhagic Disease of the Newborn. *Arch. Pediat.*, 11:559, 1894.
5. Rodda, F. C. The Coagulation Time of Blood in the Newborn: With Especial Reference to Cerebral Hemorrhage. *J.A.M.A.*, 75:452, 1920.
6. Sanford, H. N., Shmigelsky, I., and Chapin, J. M. Is Administration of Vitamin K to the Newborn of Clinical Value? *J.A.M.A.*, 118:697 (Feb. 28), 1942.
7. Parks, J., and Sweet, L. K. Does Antenatal Use of Vitamin K Prevent Hemorrhage in the New Born Infant? *Am. J. Obst. & Gynec.*, 44:432, 1942.
8. Potter, E. L. Effect on Infant Mortality of Vitamin K Administered During Labor. *Am. J. Obst. & Gynec.* In press.
9. Lehmann, J. Vitamin K as a Prophylactic in 13,000 Infants. *Lancet*, 1:493 (Apr.), 1944 (Gothenberg, Sweden).
10. Gregg, N. M. Congenital Cataract Following German Measles in the Mother. *Tr. Ophth. Soc. Australia*, 3:35, 1941.
11. Swan, C., Tostevin, A. L., Moore, B., Mayo, H., and Black, G. H. B. Congenital Defects in Infants Following Infectious Diseases During Pregnancy. *M. J. Australia*, 2:201 (Sept.), 1943.
12. Swan, C., Tostevin, A. L., Mayo, H., and Black, G. H. B. Further Observations on Congenital Defects in Infants Following Infectious Diseases During Pregnancy With Special Reference to Rubella. *M. J. Australia*, 1:409 (May 6), 1944.
13. Reese, A. B. Congenital Cataract and Other Anomalies Following German Measles in the Mother. *Am. J. Ophth.*, 27:483, 1944.
14. Rones, B. The Relationship of German Measles During Pregnancy to Congenital Ocular Defects. *Med. Ann. District of Columbia*, 13:285 (Aug.), 1944.
15. Erickson, C. A. Rubella Early in Pregnancy Causing Congenital Malformations of Eyes and Heart. *J. Pediat.*, 25:281, 1944.
16. Carruthers, D. C. Congenital Deaf-mutism as a Sequela of a Rubella-like Maternal Infection During Pregnancy. *M. J. Australia*, 1:315, March 31, 1945.
17. Gregg, N. M. Rubella During Pregnancy of the Mother with Its Sequelae of Congenital Defects in the Child. *M. J. Australia*, 1:313 (Mar.), 1945.
18. Vickery, D. Discussion of Gregg and Carruthers's Papers Read December 14, 1944. *M. J. Australia*, 1:332 (Mar. 31), 1945.

# Tuberculosis Case Finding with Mobile Photo-Roentgenographic Unit in Sumner County, Tennessee\*

R. B. TURNBULL, M.D., W. B. FARRIS, M.D., AND  
MILDRED PATTERSON

*Sumner County Health Department, Gallatin, Tenn.*

SINCE 1929 tuberculosis case finding clinics have been held regularly by the Sumner County Health Department. From 1929 to July, 1939, this service was furnished through the Division of Tuberculosis Control of the Tennessee Department of Public Health and consisted of clinics held once or twice a month in Gallatin for the examination of known cases, contacts to such cases, and individuals referred by private physicians because of symptoms. Any resident of Sumner County was eligible for examination upon referral by his family physician. With the assistance of the Commonwealth Fund, a special Tuberculosis Control Program was inaugurated in July, 1939, which was aimed particularly at the treatment of tuberculosis in the absence of adequate hospital facilities. Sufficient personnel and equipment were supplied to carry on an intensified case finding program with the treatment program. In this program four x-ray clinics a month were held in Gallatin, the county seat, and one each in Portland and Westmoreland, the two other largest community centers in the county.

The number of cases of reinfection tuberculosis in need of collapse therapy and other treatment was sufficient to warrant the expenditure of funds under

the control program. It was felt, however, that the proportion of early cases of tuberculosis discovered through the Health Department clinic was lower than it should be, and that another case finding method should be tried. Through a gift of the Commonwealth Fund, the Division of Tuberculosis Control of the Tennessee Department of Public Health purchased a mobile photo-roentgenographic unit for use in Tennessee; and Sumner County is one of the first counties making use of this unit in the extension of the case finding program. The Sumner County Medical Society has given blanket permission for x-ray examinations on the mobile unit. Since both case finding services have run and will continue to run concurrently, it is of interest to compare the numbers of people reached by each method and the comparative results in actual cases found.

There is considerable difference in the cost of the two services. The 14" x 17" flat film used in the Health Department clinic is more expensive than the 4" x 5" stereoscopic film used on the mobile unit. The usual clinic load in the Health Department clinics is approximately 30 per clinic day, while on the mobile unit 250 to 350 persons can be examined in a clinic day. The lower unit film cost and accessibility to larger groups of people during a clinic session makes the mobile unit case finding serv-

\* This investigation was made possible by the financial support of the Commonwealth Fund

ice less expensive than the Health Department clinics.

The small film is used as a screening process for the designation of definite or suspicious pathology. Cases with suspicious or definite tuberculous lesions are reexamined in special clinics using 14" x 17" film. The final interpretation is made by two clinicians using both films and other diagnostic aids.

The mobile unit was scheduled for five visits to Sumner County between October 1, 1944, and May 31, 1945. These visits varied in length from 2 to 5 weeks. During subsequent months the mobile unit will be scheduled for visits to community centers in the county until the entire population has been given an opportunity to have an x-ray examination.

The purpose of this evaluation is the presentation of the comparative effectiveness of the mobile unit and the Health Department clinic as case finding services. The material has been divided into three sections: (A) Persons Examined on Mobile Unit and in Health Department Clinic, October 1, 1944, through May 31, 1945; (B) Results of Case Finding in School, Industry, and Community Groups; and (C) Extent and Activity of Cases of Reinfection Tuberculosis.

A. PERSONS EXAMINED ON MOBILE UNIT  
AND IN HEALTH DEPARTMENT CLINIC,  
OCTOBER 1, 1944, THROUGH MAY 31,  
1945

Through Health Department activities in the past five years the citizens of Sumner County have become aware of the tuberculosis problem. In general, the people are very receptive of this new x-ray program. The first work in the initiation of this program was in organized groups. In the two shoe factories the personnel departments were contacted and were responsible for the organization of the procedures for examination of their employees. In the other indus-

tries the program was explained to plant managers and an opportunity was provided for a discussion with the employees of the importance of x-ray examinations. In all industries the response was excellent. The high schools were handled in the same manner as the industries, with the program presented to the students. For the general community survey of Gallatin, which followed the work in industries and high schools, the program was explained to many groups. These included civic and home demonstration clubs, Parent-Teacher Association, the churches, the County Court, and the City Council. Articles in newspapers, reels in movie houses, and hand bills distributed by Scouts and airplanes were used in the pre-survey publicity. Since the number of clubs was limited in Hendersonville, the second community visited, hand bills were mailed to all rural box holders in this area. The results of examinations in these two community centers only are included in this preliminary report.

During this 8 month period 5,656 x-ray examinations have been made on the mobile unit and in the Health Department clinic. Included in the total were 138 individuals who were not residents of Sumner County. The mobile unit reached 4,825 persons through the survey of five industrial plants, three high schools, the city of Gallatin, and the area of Hendersonville. The Health Department clinic furnished examinations for 831 other persons from all over Sumner County through its established x-ray clinics.

The survey includes examination of persons 12 years of age and over. According to the 1940 census, the population of Sumner County in this age group was 25,043. Thus far 5,518, or 22.0 per cent of the population of the county (excluding non-residents), have been x-rayed: 4,715, or 18.8 per cent, have been examined on the mobile unit

TABLE 1

Number and Percentage Examined on Mobile Unit in School, Industry, and Community Groups and in Health Department Clinic, by Age Group

Age Group in Years	Popu- lation	Mobile Unit										Health Dept. Clinic	
		Grand Total		Total		School		Industry		Community		No.	%
		No.	%	No.	%	No.	%	No.	%	No.	%		
Total	25,043	5,656	22.6	4,825	19.3	732	2.9	1,352	5.4	2,741	10.9	831	3.3
12-14	2,010	585	29.1	553	27.5	171	8.5	0	...	382	19.0	32	1.6
15-19	3,459	1,135	32.8	1,002	29.0	498	14.4	232	6.7	272	7.9	133	3.8
20-24	2,970	592	19.9	471	15.9	10	0.3	249	8.4	212	7.1	121	4.1
25-29	2,584	644	24.9	527	20.4	3	0.1	256	9.9	268	10.4	117	4.5
30-34	2,214	599	27.1	513	23.2	7	0.3	239	10.8	267	12.1	86	3.9
35-44	3,688	893	24.2	758	20.6	19	0.5	247	6.7	492	13.3	135	3.7
45-54	3,322	651	19.6	544	16.4	18	0.5	94	2.8	432	13.0	107	3.2
55-64	2,367	351	14.8	292	12.3	5	0.2	32	1.4	255	10.8	59	2.5
65 and over	2,429	206	8.5	165	6.8	1	*	3	0.1	161	6.6	41	1.7

\* Less than 0.05 per cent

and 803, or 3.2 per cent, in the Health Department clinic. Since one entire visit of 5 weeks' duration was devoted to the city of Gallatin, it was hoped that a high percentage of its citizens would be x-rayed. A total of 2,291, or

62.0 per cent of the city residents, did take advantage of this opportunity. The mobile unit attracted 2,111, or 57.1 per cent, of the residents of the city, while the Health Department clinic served 180, or 4.9 per cent. The white females

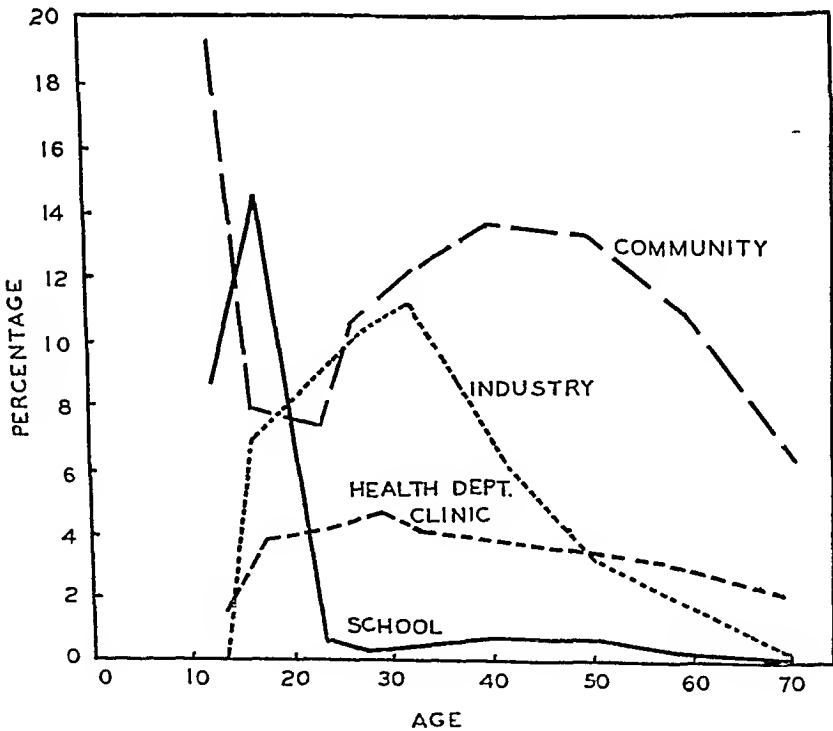


CHART A—Percentage of Population Examined in School, Industry, and Community Groups on Mobile Unit, and in Health Department Clinic, by Age

were the largest group with 1,090, or 79.2 per cent, x-rayed. The white males had the second largest number and percentage examined with 734, or 60.8 per cent. The colored females had 267, or 47.1 per cent, examined, and the colored males 200, or 36.6 per cent. The percentages for the white and colored male groups would be considerably higher if account were taken that approximately 10 per cent of the males were in the armed services. The response of the colored population was disappointing, particularly in view of the fact that the mobile unit was moved to the two colored sections of Gallatin especially to attract this portion of the city's residents.

The number and percentage by age group of the 5,656 individuals reached in this case finding program through surveys of school, industry, and community groups on the mobile unit and in the Health Department clinic, are given in Table 1. Seven hundred and thirty-two of those examined on the mobile unit were high school students and teachers, 1,352 employees in industries, and 2,741 persons in the general population. Chart A shows by age groups the percentages of population examined in the first part of this program through school, industry, and community surveys by the mobile unit and in the Health Department clinic. From Table 1 and Chart A the differences in the age distribution of the

populations of the four groups are apparent. The community survey resulted in the examination of a relatively large proportion of adults 25 years of age and over. The industrial survey reached young adults. The high school group consisted of persons under 20 years of age with the exception of a few teachers. The Health Department clinic, however, served persons of all age groups. The age composition of these groups needs to be considered in the evaluation of this case finding program.

B. RESULTS OF CASE FINDING IN SCHOOL, INDUSTRY, AND COMMUNITY GROUPS

The Health Department clinic serves two different purposes: The examination of persons as a case finding procedure, and the reexamination of persons known to have and suspected of having reinfection tuberculosis. In order to compare the results of these case finding procedures, it was necessary to use only the first examinations in the Health Department clinic. There were 500 people 12 years of age and over who were examined for the first time in the Health Department clinic during these 8 months, and the results of their examinations will be used for comparison with the results from the mobile unit.

Of 5,325 x-rays made on the mobile unit and in the Health Department clinic, 190, or 3.6 per cent, showed evidence of clinical pulmonary tubercu-

TABLE 2  
*Number and Percentage of Cases of Reinfection Tuberculosis Found in School, Industry, and Community Groups on Mobile Unit and in Health Department Clinic*

	Total Examined	Cases	
		Number	Per cent
Total	5,325	190	3.6
Mobile Unit, Total	4,825	146	3.0
High School	732	5	0.7
Industry	1,352	38	2.8
Community	2,741	103	3.8
Health Department Clinic	500	44	8.8



losis. Thus far in this program no significant difference was noted in the prevalence of tuberculosis in the white and colored groups examined. In the population x-rayed, 5, or 0.7 per cent, of the persons examined in the high school group, were found to have tuberculosis, 38, or 2.8 per cent, of the industrial employees, and 103, or 3.8 per cent, of the persons in the community group examined on the mobile unit were found to have tuberculosis. The Health Department clinic found 44 cases, or 8.8 per cent, in the persons examined for the first time. Table 2 and Chart B show clearly that the Health Department clinic is still the most efficient case finding method. The community survey was second most efficient in discovering tuberculosis, with the industrial survey following as third, and the high school survey as the least efficient.

In Table 3 appear the number and percentage of persons examined and found to have reinfection tuberculosis in the school, industry, and community groups on the mobile unit, and in the Health Department clinic by age group. The Health Department clinic has the highest percentage of cases for each age group with the exception of the small group under 15 years of age. In examination of the general community population on the mobile unit and in the Health Department clinic the highest percentages of cases were found in the age group 55 years and over, with 11.3 per cent in the community group and 35.1 per cent in the Health Department clinic, found to have reinfection tuberculosis. It is evident that the examination of persons 55 years of age and older is productive in the discovery of tuberculosis in this area.

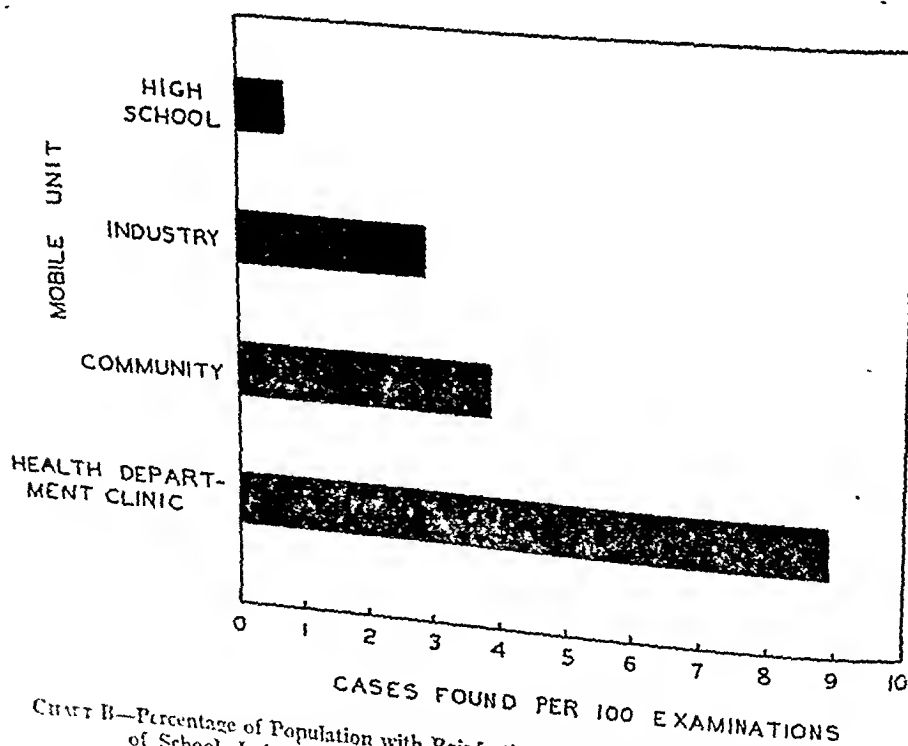


CHART B—Percentage of Population with Reinfection Tuberculosis Found on Examination of School, Industry, and Community Groups on Mobile Unit, and in Health Department Clinic

TABLE 3

Number and Percentage of Cases of Reinfection Tuberculosis Found in School, Industry, and Community Groups on Mobile Unit, and in Health Department Clinic, by Age Group

Age Group in Years	Mobile Unit														
	Total			School			Industry			Community			Health Dept. Clinic		
	Cases			Cases			Cases			Cases			Cases		
	Exam.	No.	%	Exam.	No.	%	Exam.	No.	%	Exam.	No.	%	Exam.	No.	%
Total	5,325	190	3.6	732	5	0.7	1,352	38	2.8	2,741	103	3.8	500	44	8.8
12-14	572	2	0.3	171	2	1.2	0	0	...	382	0	...	19	0	...
15-19	1,108	8	0.7	498	2	0.4	232	1	0.4	272	1	0.4	106	4	3.8
20-24	541	11	2.0	10	0	...	249	5	2.0	212	4	1.9	70	2	2.9
25-29	592	18	3.0	3	0	...	256	6	2.3	268	7	2.6	65	5	7.7
30-34	557	14	2.5	7	0	...	239	6	2.5	267	6	2.2	44	2	4.5
35-44	828	38	4.6	19	1	5.3	247	13	5.3	492	19	3.9	70	5	7.1
45-54	613	30	4.9	18	0	...	94	5	5.3	432	19	4.4	69	6	8.7
55-64	326	40	12.3	5	0	...	32	2	6.2	255	25	9.8	34	13	38.2
65 and over	188	29	15.4	1	0	...	3	0	...	161	22	13.7	23	7	30.4

The percentage of examined population with reinfection tuberculosis by age group is shown in Chart C for the mobile unit and the Health Department clinic. In the group examined on the mobile unit, the percentage of cases increased with age, which was due principally to the accumulation of inactive cases. The percentage of active cases from these examinations on the mobile unit did not vary greatly by age group. The number of examinations made by the Health Department clinic in this period

has been small, which might account for some of the variations. The percentages increased generally with age, the highest occurrence being in the age group 55-64 years. The percentage of active cases found in the Health Department clinic also is highest in this age group, being higher than the percentage with active tuberculosis found on the mobile unit in the same age group. More active cases of reinfection tuberculosis would be expected among persons who are examined because of contact to

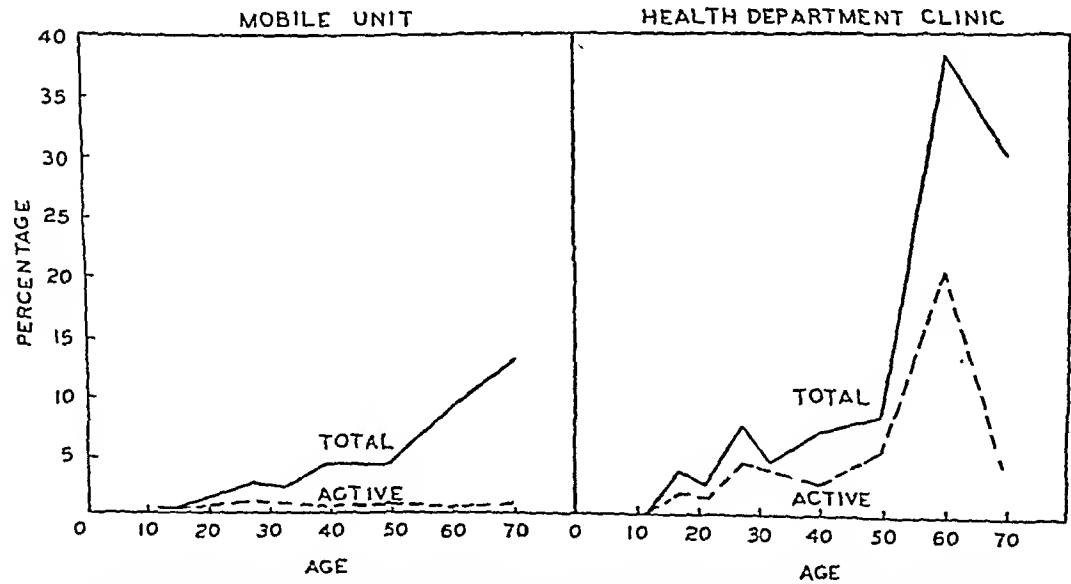


CHART C—Percentage of Examined Population with Reinfection Tuberculosis and with Active Reinfection Tuberculosis Found on Mobile Unit and in Health Department Clinic, by Age

known cases and/or because of clinical symptoms than among other groups without such characteristics.

### C. EXTENT AND ACTIVITY OF CASES OF REINFECTION TUBERCULOSIS

Through the case finding methods employed—the mobile unit and Health Department clinic—190 cases of reinfection tuberculosis were found. The extent and activity of the 146 cases from the mobile unit and 44 from the Health Department clinic are given in Table 4.

Included in the 146 cases from the mobile unit were 55 previously known cases and 91 cases not previously known to the Health Department. Thus nearly two-thirds of these cases were not known to the Health Department. There were in all 28 active cases, and of these 20 were new. Of these 20 active cases, minimal cases numbered 16, moderately advanced 3, and far advanced 1. Seventy-one of the 118 inactive cases were new, of which 55 were minimal, 15 moderately advanced, and 1 far advanced.

TABLE 4

*Extent and Activity of 190 Cases of Reinfection Tuberculosis Found on Mobile Unit and in Health Department Clinic*

Extent and Activity	Total			Mobile Unit			Health Dept. Clinic	
	Cases Found	New Cases		Cases Found	New Cases		New Cases	
		Number	Per cent		Number	Per cent	Number	Per cent
Total	190	135	99.9	146	91	100.0	44	100.0
Far advanced active	10	8	5.9	3	1	1.1	7	15.9
Moderately advanced active	18	13	9.6	8	3	3.3	10	22.7
Minimal active	22	21	15.6	17	16	17.6	5	11.4
Far advanced inactive	1	1	0.7	1	1	1.1	0	...
Moderately advanced inactive	32	20	14.8	27	15	16.5	5	11.4
Minimal inactive	107	72	53.3	90	55	60.4	17	38.6

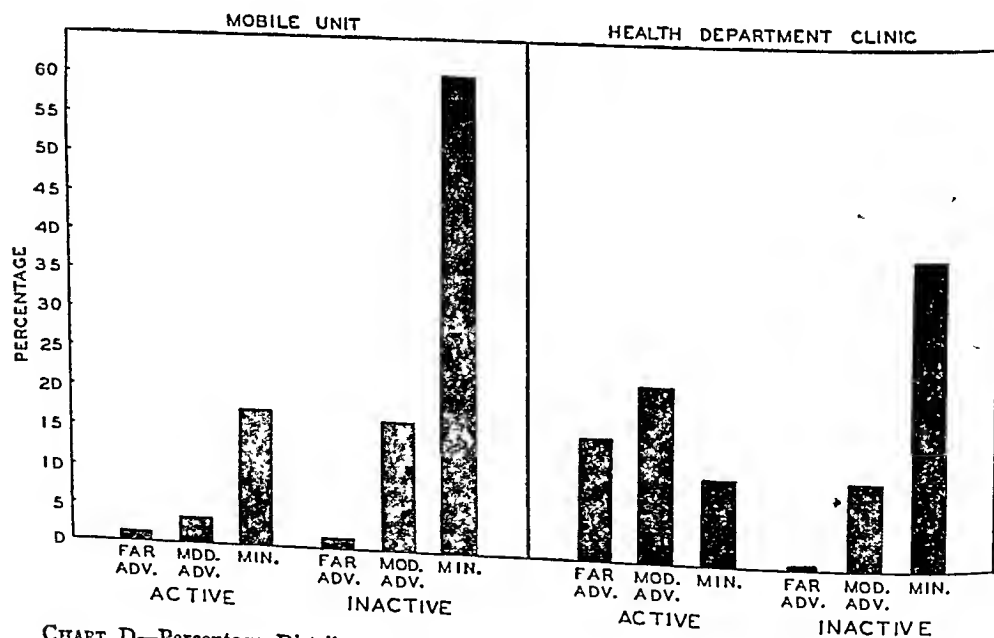


CHART D—Percentage Distribution of New Cases Found on Mobile Unit and in Health Department Clinic, by Extent and Activity

Percentage distributions of the new cases found on the mobile unit and in the Health Department clinic are shown in Chart D and Table 4 according to extent and activity. Of the 91 new cases found on the mobile unit, 20, or 22 per cent, were active, while of the new cases found in the Health Department clinic, 22, or 50 per cent, were active.

Of the new active cases in the Health Department clinic, 77 per cent were far advanced and moderately advanced, while of those found on the mobile unit only 20 per cent were far advanced and moderately advanced. It is noteworthy that minimal cases are discovered, and discovered relatively frequently, through the examination of apparently well people in these surveys of the general population. During this period of time, 16 new minimal active cases were discovered through the mobile unit and only 5 in the Health Department clinic.

One of the main objectives of the tuberculosis control program since its inception has been the adequate treatment of known cases of reinfection tuberculosis. The visits of the mobile unit to Sumner County have been scheduled so that sufficient time was allowed for institution of treatment and follow-up procedures by the Sumner County Health Department. Hospitalization and treatment of new active cases have been instituted promptly. It is felt that the success of the case finding program by use of the mobile unit is due to the fact that both case finding and treatment services are being carried on concurrently.

#### DISCUSSION

In the course of the work in the Health Department clinic in Sumner County, a relatively high proportion of the new cases of tuberculosis discovered through referral of persons with symptoms and of contacts had tuberculosis in the advanced stages. There-

fore, it seemed desirable to extend case finding activities to the so-called healthy population of the county to find persons with minimal tuberculosis before symptoms had developed. In order to reach the general population, a mobile photo-roentgenographic unit using 4" x 5" film, a gift of the Commonwealth Fund, was made available by the Tennessee Department of Public Health.

The initial work in this program with the mobile unit was with organized groups—the large industries and high schools. This service is being extended gradually to all sections of the county in order that satisfactory control and treatment procedures can be instituted promptly. In this paper the results of the program in industries and high schools and in the two communities are reported.

The comparison of the results of this program using the mobile unit with those from the routine chest clinic indicates the value of carrying on both types of services. Although the Health Department clinic is effective in the discovery of clinical tuberculosis, this case finding method needs to be supplemented in order to find tuberculosis before the disease has become advanced and has been spread to others. During this 8 month period, in addition to 44 new cases discovered in the Health Department clinic, 91 other new cases were found through the mobile unit. The community survey, which was the second most effective method of finding tuberculosis, resulted in the discovery of tuberculosis in the older as well as the younger age group.

It is noteworthy that 80 per cent of the new active cases found by the mobile unit were in the minimal stage, while of those discovered in the Health Department clinic 77 per cent were in the advanced stages of the disease. Cases in the early stages have the best opportunity for recovery. Thus the mo-

mobile unit has been a valuable aid in the discovery of minimal tuberculosis in the apparently healthy population of the county.

#### SUMMARY

1. The results of case finding through surveys in high schools, industries, and in communities in Sumner County through five visits of a mobile photo-roentgenographic unit have been compared with the results of case finding in the routine scheduled clinics of the Health Department.

2. The age distribution of the population reached in these groups differed considerably, with the community survey reaching adults in all age groups.

3. In the population x-rayed, only 0.7 per cent of the high school group were found to have clinical tuberculosis. The percentages were higher for industrial employees (2.8) and for persons examined in the community survey (3.8). The age compositions of these groups were responsible for the differences. In the Health Department clinic 8.8 per cent of the persons examined for the first time

because of symptoms or contact had tuberculosis.

4. The percentages of the examined population found with reinfection tuberculosis increased with age, with very high prevalence rates for those 55 years of age and over.

5. Through these case finding methods, 190 cases of reinfection type tuberculosis were found: 146 by the mobile unit, of which 91 were new cases, and 44 new cases through the Health Department Clinic. Thus the mobile unit was a valuable aid in the discovery of tuberculosis in Sumner County. Of the new active cases discovered by the mobile unit, 80 per cent were minimal, while of the new cases in the Health Department clinic only 23 per cent were minimal.

ACKNOWLEDGMENT is made of the assistance of E. F. Harrison, M.D., Acting Director of the Division of Tuberculosis Control, Tennessee Department of Public Health, during the period covered by this report.

Acknowledgment is also made of the assistance of Ruth R. Puffer, Dr.P.H., Director of Statistical Service of the Tennessee Department of Public Health.

#### ONE REASON WHY WE ASK FOR BACK JOURNALS

We have been asking readers of the JOURNAL who have back copies of the magazine which they no longer need to send them to the office. These copies are being used to complete volumes which are then sent to devastated libraries and to individuals desperately seeking to catch up on professional literature they have missed during war years.

The following letter tells more eloquently than we can how valuable these old Journals can be.

"Dear Sirs:

Way back in 1941, before the outbreak, I used to receive copies of our Journal as member and subscriber. That was shortly before I was mobilized by the Philippine Army and inducted into the service of the United States Forces in the Far East (USAFFE of MacArthur).

After the fall of the Philippines and during the Jap Occupation, I've missed our Journal. As a guerilla, I've been longing for some copies in our mountain ramparts. I couldn't even get my old copies as my house and everything in it, including the Journals, were all burned by Japs.

Now that all is well, I shall be glad to hear from you.

Sincerely,

....."

# Control of Typhus in Italy 1943-1944 by Use of DDT\*

LT. COL. CHARLES M. WHEELER, SN.C., AUS

*Member United States of America Typhus Commission, Washington, D. C.*

DURING the winter of 1943-1944 a severe epidemic of typhus fever threatened the population of Naples and Southern Italy. When Allied Forces landed in that country in September, 1943, cases of typhus had been reported dating back as early as March of that year. In December a sharp increase in the number of cases occurred and deep concern was felt for the safety of Allied troops and the Italian civilian population. Consequently immediate steps had to be taken to institute proper control measures.

## HISTORY OF TYPHUS FEVER IN ITALY

Italy appears to have repeatedly escaped the ravages of severe typhus epidemics which have periodically swept over eastern and western Europe, Russia, the countries bordering the eastern end of the Mediterranean Sea, Egypt, and North Africa. Records show that the principal rickettsial infection in Italy up to 1915 was attributed to *Rickettsia conori*, the causative organisms of Boutonneuse fever which is transmitted by a dog tick, *Rhipicephalus sanguineus*.

During the 10 year period, 1915-1924, a total of 923 cases of epidemic

louse-borne typhus were reported to have occurred in various parts of the country. The greatest number of cases occurred in the year 1919 following the general resettlement migration of peoples all over Europe after the cessation of hostilities of World War I. The incidence of typhus fever dropped rapidly during the next decade, 1925-1934. A slight outbreak of the disease occurred in 1926 and 1927 but soon disappeared, and for the remaining seven years no cases of louse-borne typhus were recorded.† This apparent absence of typhus in Italy continued for another 8 years broken only by the threatened severe epidemic of 1943-1944. Thus the general population of Italy apparently had not known typhus for a period of 15 years and consequently was most susceptible.

Available records show that the first cases of typhus reported in Italy occurred in the city of Bari in March, and in Aversa in April, 1943, with other scattered cases in several small villages in Southern Italy. In the city of Naples the first authentic case was reported in July, 1943.

Many theories have been formulated concerning the possible source of typhus fever in Italy. None has actually been confirmed but in the absence of final reports, refugees entering Italy from the Balkan countries and Italian Prisoners

\* Based on a paper presented before the Epidemiology Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 3, 1944.

From the United States of America Typhus Commission, War Department, Washington, D. C.

† Bull. Health Organ. League of Nations, X, 1, 1943; this bulletin shows 15 deaths due to typhus over a 5 year period, 1930-1934.

of War returning from Tunisia apparently brought the infection with them and undoubtedly introduced the disease at several points in Italy.

#### TYPHUS IN NAPLES

Following the original introduction of typhus into a practically non-immune population, the incidence of cases in Naples rose rather rapidly during the months of November and December, 1943.

Records indicate that during the late spring and summer months of 1943, typhus had been simmering insidiously in Naples. As colder weather approached reported cases became more frequent. In October, 29 cases occurred; in November, 61 persons had contracted the disease, and by December 5, 26 new cases had been reported. This number, in comparison with only 2 cases reported during the first 5 days of November, gave warning and forecast the outbreak of a severe epidemic as the winter progressed. By December 15, 83 cases had been reported in Naples. From 83 cases by the middle of this month, the number mounted to 288 for the latter half of the month, a total of 371 cases for December.

This was the picture of the case incidence of typhus in Naples shortly before the United States of America Typhus Commission was placed in charge of the control of the epidemic. The picture of conditions in Naples and, in fact, all of Southern Italy, was in complete harmony with descriptions of the classical spread of typhus fever epidemics of former years.

In Naples estimates of the civilian population in December, 1943, varied between 750,000 and 1,000,000 persons. In addition to this huge population were hundreds of Allied soldiers, returning Italian civilians, and refugees from other war-torn parts of Italy and from across the Adriatic. Living conditions in general were congested and unsani-

tary. Telephone, transportation, and other public utilities were disrupted. Medical personnel for the most part were in the army. Food was scarce, "black market" prices exorbitant, and undernourishment of the inhabitants of Naples was striking. The people were confused, frightened, cold and hungry. Leadership had changed so fast in recent weeks that the average individual scarcely knew which way to turn nor just whom to believe. The recent bombings and terrorist activities of the Germans, and then bombings by Allied Forces kept the people in a constant state of fear and anxiety. At the first wail of the air-raid alarm thousands of people would pour from their homes and crowd into the numerous air-raid shelters scattered throughout the city, of which there were 385.

The air-raid shelters (*ricoveri*) were most interesting. The hills of Naples on which the city is built are of a limestone formation honey-combed by huge caverns. Long, dark or dimly lighted winding staircases or sloping tunnels led down into many of these caverns to a depth of as much as 75 to 100 feet. In some of these tremendous underground rooms thousands of people were found living under quite primitive conditions. Some of the inhabitants were living more comfortably than others, having brought along with them some of their household effects, their beds and bedding. One series of caves was particularly impressive. These were arranged in three levels opening onto the face of a limestone cliff. The rooms extended more than 100 yards back into the cliff, with arched ceilings as high as 50 to 75 feet. Along the walls in the lower of the three rooms people had erected small wooden shacks, one to three stories high. As many as 3,000 persons had lived in these 3 caverns at one time or another. The second- and third-level rooms housed fewer persons and the homes here ranged from stone

"mansions" to wood, metal, and bur-lap covered shacks.

Not all of the ricoveri were formed from natural caverns. Many small shelters were constructed of reinforced concrete and located along the railroad yards, dock areas, etc. These shelters were small, poorly lighted, and very poorly ventilated. No sanitary facilities were available in most of them and people lived in their own filth and grime, dirt and disease. In many of these shelters typhus cases and corpses of persons dead from typhus were found, and for each one found several persons as "contacts" were free to leave the shelter and scatter infective lice to other parts of the city.

In Naples one instance of probable wholesale broadcast of infected lice is interesting. In the huge three-level grotto near *Marginella* railroad station two cases of typhus were discovered by the night control crews. The patients, a mother and her son, were in a small, one-room wooden shack deep inside the second-level cavern. Both were seriously ill and were in the only bed in the room; both were fully clothed but disgustingly and pathetically filthy, and heavily infested with lice. The father of the family was able to work during the day but slept at night in this same bed. Upon examination of his clothing he was found to be heavily infested as well. His occupation at the time was driving a horse and cart, delivering various articles to homes in scattered parts of the city. These three persons were isolated in a hospital; and shortly afterward the father also developed the disease. One wonders how many cases of typhus this man may have caused.

Many of the homes visited were nearly as filthy and crowded as the ricoveri. In some instances two and three families were living crowded into two average-size rooms in a dark, damp cold building. Children were dirty and poorly clothed. With no soap, no fuel,

and poor food there was little incentive or interest among many to try to keep clean.

No definite observations were made in the beginning concerning the extent of the louse infestation among the civilian population of the city. Assurance was given that it was widespread and the percentage of infestation high. A few counts made on clothing of persons admitted to the Cotugno hospital early in the epidemic substantiated this assurance.

The following summarizes the reasons for the spread of typhus in Naples:

1. Introduction of typhus into a non-immune population
2. Crowding and overcrowding of people in homes and air-raid shelters
3. Intensive and widespread infestation-with body lice
4. Scarcity of proper kinds of food
5. Bathing facilities lacking or out of order
6. Scarcity of fuel
7. Lack of adequate medical care, hospitalization, and medical supplies
8. Little or no soap available
9. Lack of proper warm clothing and sound shoes among the poorer classes
10. Disruption of water, light, and sewer systems
11. Demoralization of transportation and communication systems
12. Confusion of people due to lack of proper leadership in all city civil government branches, including the Health Department

#### THE TYPHUS CONTROL PROGRAM

The development of three dusting powders lethal to lice (MYL and DDT in the United States, and AL-63 in England); the demonstration in the laboratory and in the field of the effectiveness of these powders in the control of lice; and the arresting of small typhus epidemics in native villages of Mexico, Algeria, and Egypt through the use of these powders were proof that the use of louse powder in the developing typhus emergency in Italy was the control method of choice in the field.

Methods of application of powder had been studied by various groups of



investigators, particularly the Rockefeller Foundation Typhus Team in collaboration with the Office of the Chief Surgeon, North African Theater of Operations. The procedure adopted for the application of powder to the clothing of infested individuals was speedy, economical in the amount of powder used, and eliminated the necessity for the removal of the clothing from the body of the person to be dusted. Essentially the procedure consisted of forcefully blowing powder, by hand-dusters or power-dusters, between the layers of clothing worn by the individual and between the innermost layer of clothing and the skin of the body. This was accomplished by a uniform technique, inserting the nozzle of the duster up the sleeves, down the neck, (both front and back), around the waist-line, and into the crotch area of clothing. Hair and any cap or hat were dusted thoroughly. An infested person properly dusted is no longer a menace to others and will remain so for a period of at least two weeks, at the end of which time he should be redusted. Approximately 1 to 1½ oz. of powder per person is sufficient to insure the thorough dusting of all clothing worn.

Actual dusting operations were instituted on December 15, 1943, by a dusting team previously trained by a member of the Health Commission of the Rockefeller Foundation. This team of workers dusted all outbound passengers boarding a train scheduled to leave Naples for Bari. The following day, December 16, contact dusting teams were organized and sent out to addresses of reported cases of typhus emanating from homes or institutions. On the night of December 27, the first dusting of persons living in air-raid shelters was undertaken. In addition to their regular dusting duties, each team was instructed to report any new cases or suspected cases of typhus. These teams discovered many new

cases which previously had not been reported to nor isolated by civil health authorities. The importance of proper case finding and reporting was so apparent that a special case finding section under Major R. L. Cherry, M.C. (AUS) of the Allied Control Commission was organized. The case finding and dusting operations were severely handicapped for the lack of proper assistants and dependable transportation.

Before the United States of America Typhus Commission was charged with the responsibility for control on January 3, 1944, many plans had to be drawn up and their values discussed. By December 26, 1943, the typhus control program, approved by the War Department, provided for six operational sections. Four of these sections were utilized from the outset, namely:

1. The case finding section
2. The contact delousing section
3. The mass delousing section
4. The immunization section

These four sections were in operation a few days before the fifth section, the flying squadron, became active. Later in the month of January a refugee delousing section was established to complete the table of organization as planned.

#### THE CASE FINDING SECTION

The case finding section was reorganized by and in charge of Major J. C. Snyder, M.C. (AUS) (now Lt. Col.), assisted by Major R. L. Cherry, M.C. (AUS) and 8 Italian-speaking U. S. Army physicians. Up to January 3, 1944, cases and suspects had been reported to the AMG Health Service for the City of Naples. These reports came in from various sources, with duplications in many instances. It was difficult to be sure that the cases reported were actually authentic cases of typhus fever until diagnoses were confirmed at the Cotugno Infectious Dis-

eases Hospital. However, not all cases were brought to this hospital and the problem was to discover whether these reported cases were actually typhus or some other disease easily confused with typhus in the early stages. Such was the job of the case finding section at the very beginning. Through the untiring efforts of Lt. Col. Snyder, this situation was gradually untangled and all parties concerned agreed to the proposition that the official daily list of typhus cases released by the Health Department be made up only from names of actual cases or definite suspects diagnosed either by the Cotugno Hospital staff physicians or by one of the U. S. Army physicians connected with the Typhus Commission. By intensive investigation of the back-log of reported cases by the U.S.A. Typhus Commission doctors, a gradually clearing picture of the situation began to take place, so that by January 10, 1944, this back-log of cases had been checked and case finding was put on a more logical basis.

Higher authorities directed that General Fox and the U.S.A. Typhus Commission be given the responsibility of typhus control and the Allied Military Government be responsible for ambulance, hearse service, isolation, hospitalization, and care of cases, including the steam sterilization of the clothing of cases admitted.

*Organization*—The work of the case finding section was accomplished through eight case finding teams, each team being in charge of a U. S. Army physician, assisted by an Italian nurse. Later in the work it was found desirable to add two persons to serve as dusters to each team. These people were transferred from the contact delousing section. A weapons carrier and driver served each team. Thus every case finding team was an independent unit.

*Duties*—The duties of the teams were:

1. Extensive and intensive case finding
2. Dusting of immediate family contacts as well as the patient or corpse
3. Isolation of patient (summoning ambulance)
4. Reporting of corpses found and summoning the hearse

*Operation*—In order to facilitate the location of addresses of reported cases, by agreement and coöperation with the contact delousing service, the city was arbitrarily divided into zones. These zones were outlined and marked on a large map of the city. Copies of this map were distributed among the other working sections of the Typhus Commission, and other copies sent to the Health Office of the AMG. As cases were reported, names, addresses, and map-reference zones were written on individual case history cards. These cards were then grouped by zones and given to the physician in charge of the team responsible for case finding in the zones assigned to him. At each address, if the case reported was a definite case of typhus or a suspect, this person was immediately dusted with the insecticidal powder by the dusters of the team, ordered to be hospitalized, and an ambulance summoned. In addition the immediate family contacts, living in the same room or house, were similarly dusted. Beds, bedding and extra clothing were also treated. In the meantime the nurse of the team was busy obtaining names of all of the persons of the family. These names were recorded on the case history card. The temperatures of all persons of the family were taken at the time of the visit.

Any person showing an elevation in temperature was placed under observation. If any suspicion of typhus was noted among these persons, they were ordered to be hospitalized at once. Mistakes of diagnosis were certain to occur, but a mistake on the safe side was not detrimental in this program. If a corpse was discovered, the clothes and

the body were dusted and the hearse summoned.

As each team reported back to headquarters, the patients' names, the names of the immediate family of each patient, addresses and map-reference zones were transferred to another card. This second card was given to the contact delousing service for further action.

#### CONTACT DELOUSING SECTION

*Organization*—The contact delousing service was reorganized and placed in charge of Major C. M. Wheeler, Sn.C. (AUS). The purpose of this section was to apply lousicidal powder to the bodies, clothing, extra clothing, beds, and bedding of definite or suspected typhus patients and contacts reported by the case finding section. At first no distinction was made between persons termed "contacts." After working with cases and contacts it was soon found that persons as contacts of typhus cases fell into three general classes: (a) contacts found in the *home* or in the immediate neighborhood, (b) contacts of cases discovered in *institutions* (such as prisons, hospitals, etc.), and (c) contacts occurring in the *air-raid shelters*. In order to deal more effectively with these three types of contacts the contact delousing section was organized to include three services; namely, the case-contact service, the "special" service, and the ricoveri service.

Each of these three services was in direct charge of a United States Army Officer assigned to, or a member of, the Typhus Commission. Each officer was assisted by an American (bi-lingual) civilian physician.

#### THE CASE-CONTACT SERVICE

*Organization* — The field working units consisted of the following personnel and equipment:

1. Squad—one nurse and two male dusters

2. Team—2-3 squads, depending upon the assignment of work

3. Weapons carrier and an enlisted man as driver

*Duties*—The duties of the dusting teams were as follows:

1. Continued case-contact dusting within the home or building in which cases had occurred

2. Focal dusting of all persons in dwellings within a prescribed given area in order to effect a clear area around the home

3. Reporting of all new suspects or new cases found

*Operation*—The cards given to this service daily by the case finding section were sorted as to map-reference zone and distributed among the six team leaders of each of the operating units on the same day or the following morning. The aim was to attempt to dust all contacts of every case on the day the case was reported. Each unit, equipped with a supply of powder and hand dust guns, visited the addresses assigned. Powder was applied in the usual manner to all persons as outlined above. If a unit had several addresses to visit, focal dusting was delayed until every patient and his household contacts were treated. Focal dusting was attempted later in the day or on the following day. In order to speed up the work of dusting the immediate family contacts, 2 dusters from the contact delousing section were assigned to work with each of the 8 case finding teams. These dusters were instructed to dust the cases and the immediate members of the family during the time of the first visit of the case finding team to the addresses in question.

The work of this department was essentially a room-by-room, house-to-house campaign in an attempt to effect a louse-free area around the place from which the case or cases originated.

#### SPECIAL SERVICES

The working units were made up in essentially the same manner as the units

of the case-contact service. In fact the teams of the two services were interchangeable and could be used for work of either.

*Duties*—The dusting teams were organized to do special project dusting of prisons, reformatories, religious institutions (if schools, then only the teaching personnel and not the school children were dusted unless typhus had been reported). Nuns and Sisters were instructed in dusting procedures and furnished some dust guns and a supply of powder, with the understanding that they were to train others and in this way accomplish the complete dusting of all the Sisters concerned. The priests were dusted in connection with the program of the immunization section. Homes for the Aged were treated on request. Carabineiri and civilian police were dusted in conjunction with the activities of the immunization section. Hospitals (general, special, mental), clinics, and sanatoria were included in the list of work for this service. Certain industrial organizations (upon request) and miscellaneous other groups of persons came under the activities of this service.

For smoothness of operation a priority list of dusting projects was established. The institutions in which cases of typhus had occurred were given highest priority. The remainder of the list was given priority based on the estimated urgency of the requests submitted to the field office of the Typhus Commission.

This service began operations with two units. The nurse in charge of each dusting team was given a work sheet on which were written the names of the institutions or groups of persons to be visited, addresses and map-reference zones. If a case of typhus had been reported, the patient's name was included on the sheet. Each team was then dispatched to the address or groups of addresses as indicated. Thorough dusting of all inmates, per-

sonnel and beds was accomplished. In some of the larger hospitals and prisons a routine dusting schedule at 14 day intervals was employed. In addition a daily application of powder was given to all new incoming prisoners brought in during the night. These prisoners were isolated in a separate wing of the prison and held until the dusting teams arrived on the following morning. Permanent dusting stations were set up by the mass delousing section to dust all incoming and outgoing patients, as well as any hospital visitors.

The special service teams worked in close coöperation with the flying squadron in assisting in carrying out a program of contact and focal dusting in nearby towns and villages. Assistance was also given to the work of the refugee section at the time of its organization.

#### THE RICOVERO SERVICE

This service was reorganized and placed in charge of the writer. The teams of this service were composed entirely of men:

1. Squad—An Italian civilian physician in charge, and 3 male dusters
2. Team—Two or three squads depending upon the amount of work to be done
3. Weapons' carrier and enlisted man as driver

The duties of the teams of this section were chiefly as follows:

1. Dusting of any cases, suspect cases, and corpses found in the shelters
2. Dusting of all persons, transient or permanent, living within these shelters. Dusting of beds and bedding in the shelters in which typhus had occurred or was present, or in cases where extreme lousiness was noted
3. Reporting of any new suspects or new typhus cases to the case finding section for investigation

*Operation*—The initial work of this service employed the services of six units. Each unit was composed of 3 squads of 4 men each. This number of

units remained the same during the period when case incidence was at its peak and for several weeks following. The number of squads was gradually reduced in proportion to the decreasing number of inhabitants found in the shelters as the epidemic died down and the fear of bombings decreased.

A list of 385 air-raid shelters comprised the work order for the teams of this service. The location of these shelters was marked on the map of the city and a list compiled of the names of these shelters grouped by map-reference zone. Each unit was given the responsibility for a certain number of these shelters in the zones assigned.

Work by necessity had to be done at night in order to be sure the majority of the inhabitants were "at home." An early curfew helped considerably in assuring the workers that the large majority of people frequenting these places would be found by the time the teams arrived. During the day the supervisor, in company with an Italian civilian employee, visited the shelters to be treated during the night. From this visit the amount of equipment and personnel necessary to complete the assignment were ascertained. In case the shelter was one of the larger ones, two units would be detailed to work this one shelter. A schedule was arranged so that each of the inhabited shelters could be visited once every 7 days. Approximately one-fourth of the shelters were inhabited more or less permanently at the time of the epidemic. Repeat check-up visits to many of the uninhabited shelters had to be made from time to time. All of the shelters in the city, as far as could be determined, were visited many times during the course of the work.

The dusting teams, as they entered the shelters, posted one or two men at each of the entrances—some *ricoveri* had as many as 4 separate entrances. These men were instructed to dust any

stragglers entering after curfew and to prevent anyone from leaving without having been dusted. The remainder of the team members proceeded to dust, one by one, the inhabitants of the shelters. Naturally there was plenty of excitement, but very little trouble was encountered among the people, and after a few visits, the teams were received with general good feeling.

Each person dusted was examined by the doctor in charge, in order to determine if a thorough dusting job had been done. Some were turned back for a repeat dusting. Counts of the number of persons treated were made by the leader of each squad.

During air-raids and air-raid alarms, hundreds of people would swarm into the shelters. Work was then nearly impossible. What effect the numerous air-raids may have had on a rise in the case incidence during the epidemic has not been determined.

#### MASS DELOUSING SECTION

The mass delousing section was the function of the Typhus Team of The Rockefeller Foundation under the direction of Dr. F. L. Soper, assisted by Drs. W. A. Davis, L. A. Riehl, and F. H. Markam. This section was organized primarily for the purpose of delousing the entire civilian population of the city of Naples.

In order to carry out such a massive program, powdering stations located at strategic points throughout the city were established. Plans were formulated for the installation of 50 such delousing stations equipped to dust as many as 100,000 persons per day. These stations were located in churches, schools, railway stations, hospitals, quarantine stations on roads leading out of the city, and empty buildings. The sites were chosen based on density of population, rate of typhus in the immediate neighborhood, and convenience to homes, factories, and shops.

Each station was in charge of one person who served as foreman. He was directly responsible for the teams under him, which numbered from 4 to 24 persons depending upon the location and size of the station. The work of the stations was supervised by several Italian civilian doctors each of whom was responsible for from four to eight stations.

By January 3, 1944, 10 dusting stations had been established. This number was gradually increased to a total of 40 operating stations by February 8 in which 439 persons were employed. As the severity of the epidemic diminished the number of stations and personnel was gradually reduced.

This section, as the number of typhus cases diminished, turned a share of its attention to a survey of the various zones of the city to determine as nearly as possible the percentage of persons in the city who had been dusted one or more times, and the extent of lousiness still present. In zones where less than 70 per cent of the population reported having been dusted but one time, special house-to-house dusting, using the block as a unit, was organized on February 6. A similar system was in use by the contact delousing section about the same time. On February 14 the block dusting operations of the two sections were coördinated, and placed under the supervision of Drs. Markam and Riehl of the mass delousing section.

#### THE IMMUNIZATION SECTION

This section was organized by Captain (now Major) R. S. Ecke, M.C. (AUS), and Major R. L. Rogers, M.C. (AUS). Although an important section, its function was entirely apart from the DDT control program and will be discussed in a future more detailed report.

#### THE FLYING SQUADRON SECTION

In order to cope with the cases ap-

pearing in outlying districts the necessity for a completely mobile, self-contained case finding, immunizing and delousing service was apparent. Such a service was organized and directed by Captain (now Major) T. E. Woodward, M.C. (AUS), a member of the Typhus Commission.

*Organization*—The flying squadron was organized January 7 to conduct typhus control measures among civilians in towns and villages of Southern Italy.

The original plans submitted to the Field Director of the Typhus Commission called for an investigating team composed of a physician, an interpreter, and a driver. The purpose of this team was to investigate all suspects reported from areas outside Naples proper, diagnose the case, if possible, and, regardless of whether or not the patient was a definite typhus case, the team performed the following work:

1. Powdered all the family members present and the beds, bedding and extra clothing
2. Powdered other persons in the house or building who might have been close contacts
3. Vaccinated the immediate family and certain other possible contacts, using the one-dose method
4. Summoned the ambulance for isolation of the patient

While in the town the team consulted the responsible military and civilian authorities concerning future installation of mass powdering stations if conditions demanded. In areas near Naples these stations were to be organized and the work conducted by the mass delousing section, otherwise the personnel of the flying squadron would operate a temporary mass delousing station. Arrangements were also made for large-scale vaccination of hospital personnel, nurses, doctors, and certain organized civilian groups if necessary.

Up to April 1, 1944, 43 towns were visited by the teams of the flying squadron, including one trip by Major Woodward via plane, to Lecce, a town

TABLE 1

	<i>Cases</i>	<i>Number of Dustings</i>				
		<i>Contacts</i>	<i>Special Service</i>	<i>Ricoveri</i>	<i>Station</i>	<i>Total</i>
Naples	1,404	270,315	56,725	112,294	2,214,122	2,653,456
Outside Naples	510	201,257	....	....	411,073	612,330
Total	1,914	471,572	56,725	112,294	2,625,195	3,265,786

(Data in the above table furnished by Dr. F. H. Markam, International Health Commission of the International Health Division, Rockefeller Foundation.)

in the "heel" of Italy. In these towns 257 cases of typhus had occurred and contacts of these cases were dusted. By September, 1944, 510 cases in 68 towns and villages in Southern Italy had occurred.

#### THE REFUGEE SECTION

As the war progressed the refugee problem became more and more acute. From Yugoslavia refugees came into Italy from across the Adriatic Sea and landed in scattered places along the eastern coast. Attempts by certain agencies were made to collect these refugees and bring them into one central point. At this point attempts were made to collect these people and disinfect them before transferring them to Taranto for subsequent shipment to refugee camps in Syria, Egypt, Palestine, and North Africa.

The original plans of the Typhus Commission provided for the organization of a section to deal with such conditions. Major R. S. Ecke, M.C., was instructed to organize the work on January 27, 1944.

Through the efforts of Major Ecke and under his supervision, facilities for delousing refugees and their effects were provided at all of the refugee collecting points in Southern Italy.

By January 10, 1944, within a month after control operations had been put into effect, the peak of the epidemic had been reached and a sharp decrease in the number of reported cases occurred. By February 20, 1944, the

typhus fever epidemic in Naples appeared to have been definitely broken and, upon direction of Brigadier General L. A. Fox, the majority of the U. S. Typhus Commission members were called back to their headquarters in Cairo. Major Woodward and Major Ecke remained for a few weeks longer working with their respective sections in dealing with typhus outside Naples and with the refugee problem. Responsibility for further control operations was placed in charge of the Allied Control Commission under the direction of Lt. Col. W. C. Williams, M.C. (AUS).

The combined efforts of the sections responsible for the application of the lousicidal powder to the clothing and bedding of typhus patients and their household contacts apparently played the important rôle in arresting the typhus epidemic in Naples and Southern Italy. Mass delousing reduced the louse population density to a low level, and the contact delousing operations eliminated the great percentage of infective lice.

Table 1 summarizes the total number of reported cases together with the total dusting figures of all sections concerned.

At the time of writing this report, 9 delousing stations are still in operation in Naples, which handle an average of 500 persons daily who come in voluntarily to be dusted. At various localities in Southern Italy, supplies of 10 per cent DDT powder and dust guns are furnished to responsible health authori-

ties in order to take care of any local outbreaks that may occur.

In future operations the importance of case finding and contact delousing cannot be over-emphasized. These two sections must work in close coöperation at all times.

Availability of supplies, complete organization of the control program,

intensive and extensive case finding, immediate isolation (hospitalization) of cases, rapid but thorough contact delousing of immediate family contacts, and sufficient and dependable transportation are cardinal points in the successful execution of a typhus control program based on the use of a lousicidal powder such as DDT.

## Citizen's Planning Committee for Coördination of Voluntary Health Agencies

The Gunn-Platt report, *Voluntary Health Agencies — An Interpretive Study*, continues to make history. In response to requests from local citizen groups all over the country, the National Health Council has organized a Citizen's Planning Committee. This committee of 25 citizen-leaders in many fields of public service will furnish the leadership for a movement to coördinate the work of the 20,000 voluntary health agencies of the country. In the words of the authors, this is the outstanding need of the voluntary health field of today. "If we are to avoid authoritarian prescriptions or regimentations, we must direct our efforts toward a unified health purpose in the broadest terms, and we must build up this essential unity in service by deliberately federating the independent specialized organization from the ground up."

This committee met in New York on January 16, and organized its work for the coming year. Full details will be reported in a later issue of the *Journal*.

The members of the committee are:

Leroy A. Lincoln, Pres., Metropolitan Life Insurance Co.

Raymond B. Fosdick, Pres., Rockefeller Foundation

Chester I. Barnard, Pres., New Jersey Bell Telephone Co.

Guy Emerson, Vice-Pres., Bankers Trust Co.

Louis I. Dublin, Ph.D., 2nd Vice-Pres. and Statistician of the Metropolitan Life Insurance Co.

Irving Abramson, Chairman, C.I.O. Community Services Committee

Mason Bigelow, President, National Society for the Prevention of Blindness

Morgan B. Brainard, Sr., President, Aetna Life Insurance Company

Senator Thomas C. Desmond of New York

Charles T. Fisher, Jr., President, National Bank of Detroit

Ralph Hayes, Executive Director, New York Community Trust Company

Mrs. Shepard Krech, President, Maternity Center Association

Mrs. Albert Lasker, Secretary, National Committee for Mental Hygiene

Mrs. Oswald B. Lord, National War Fund

Mrs. William Barclay Parsons, former Administrator, Volunteer Special Services, American Red Cross

E. A. Roberts, President, Fidelity Mutual Life Insurance Company

Col. Howard A. Rusk, *New York Times*

A. J. Seymour, General Manager, National War Fund

Tom K. Smith, President, Boatmen's National Bank of St. Louis

Arthur Hays Sulzberger, President, *New York Times*

Gerard Swope, General Electric Company

Ray Lyman Wilbur, M.D., Chancellor, Leland Stanford University

Mathew Woll, 2nd Vice President, American Federation of Labor



# Immunological Studies on an Epidemic of Influenza in Iceland

BJÖRN SIGURDSSON, M.D., AND ÓLAFUR BJARNASON, M.D.

*Department of Pathology, University of Iceland, Reykjavik*

IN the fall of 1943 an epidemic of influenza occurred in Iceland. In Reykjavik the first cases were reported on the 12th of October and the epidemic lasted about 5 weeks.

The disease was comparatively mild and presented the usual clinical signs—fever, headache, respiratory symptoms, etc. It is well known that an epidemic of influenza occurred in England and America at about the same time.

Figure 1 is based on statistics from Dr. M. Pétursson the Chief Health Officer for the City of Reykjavik and shows the number of reported cases of

influenza during the course of the epidemic.

From these data it will be seen that the epidemic reached its highest point quickly. It should be pointed out, however, that in the week preceding the peak of the epidemic, although only 6 cases of influenza were reported, an unusual number of cases of "catarrhus respiratorius acutus" occurred. Probably several of the first influenza cases were erroneously given this diagnosis.

## MATERIALS AND METHODS

It was desired to find out what type

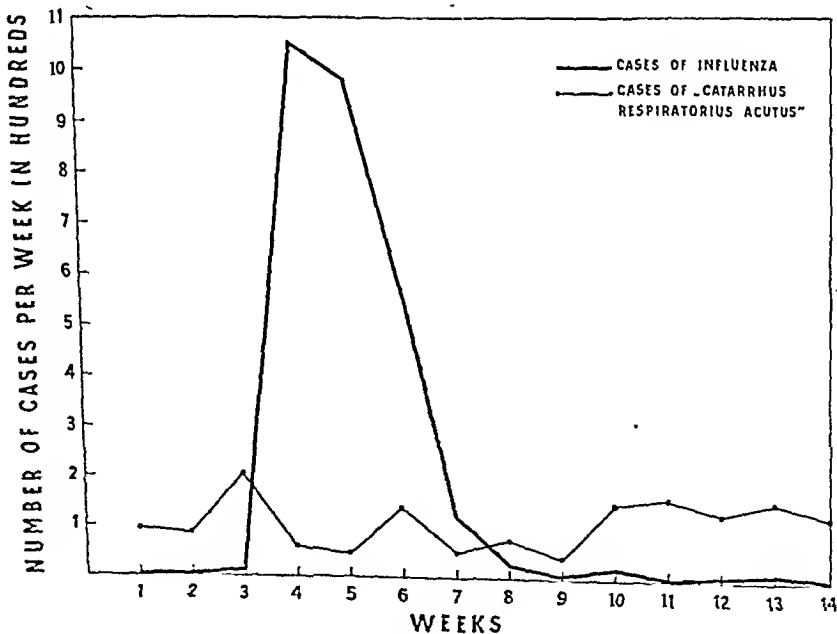


FIGURE 1

of virus had been responsible for this outbreak. An attempt was made to detect virus in nasal washings and garglings from 4 patients in the acute stage of illness. As a sufficient number of ferrets were not available, inoculations into chick embryos only could be carried out.

The nasal washings were filtered through Gradocol membranes and inoculated into eggs. The amniotic fluid was harvested 2 days later and passed into other embryos. Four such passages were carried out with each inoculum. Each time the fluids were tested for agglutinins against chicken erythrocytes by Hirst's method. No agglutinins were found and the attempts to isolate virus were thus unsuccessful.

Facilities were not available to carry out more extensive attempts to isolate virus as would have been desirable. This report is concerned with the detection of a rise in serum antibody titer against one or other of the influenza virus strains.

Samples of blood were taken from 22 patients on the first, second, or third day of illness. Second samples were obtained from 18 of these patients 3-4 weeks later.

The two samples of serum from each of these 18 patients were subsequently tested for antibodies against 3 strains of influenza virus, i.e., A, B, and swine virus.

The technic employed was that de-

scribed by Hirst, utilizing the power of specific antibodies to inhibit the agglutinating effect of the virus.<sup>1</sup>

STRAINS OF VIRUS

The A virus was the PR8 strain, the B virus the Lee Strain, both of them brought here by one of us from the Rockefeller Institute in Princeton, N. J., U. S. A. The swine strain was kindly sent to us by Dr. C. H. Andrewes, The National Institute for Medical Research, London.

The viruses were maintained by intraembryonic inoculations in chick embryos, incubated at 37° C. for 2 days and the embryonic fluids then harvested.

In order to control the identity of the strains of virus, they were tested against known specific immune sera, using the red cell agglutination as indicator reaction.

The sera against A and B viruses were ferret sera obtained from Dr. G. K. Hirst of the International Health Division of the Rockefeller Foundation, New York, and the anti-swine virus serum was swine serum obtained from Dr. R. E. Shope of the Rockefeller Institute in Princeton.

The results of such tests are shown in Table 1. It seems beyond doubt that the virus strains were correctly labeled.

The technic employed in the main test was that described by Hirst.<sup>1</sup> The sera to be tested were diluted in two-fold steps in saline. The lowest dilu-

TABLE 1

Control of the Identity of the Viruses Employed. The Inhibiting Effect of Known Specific Antisera on the Agglutinating Power of the 3 Virus Strains

Virus Strain	Serum	Dilution of Serum								
		1/20	1/40	1/80	1/160	1/320	1/640	1/1,280	1/2,560	1/5,120
PR8	{PR8	0	0	0	0	0	0	0	0	+
	{Lee	+	+	++	+++	++++	++++	++++	++++	++++
	{Swine	++	++	+++	++++	++++	++++	++++	++++	++++
Lee	{PR8	+	+	++	+++	++++	++++	++++	++++	++++
	{Lee	0	0	0	0	0	0	0	0	+
	{Swine	++	+++	++++	++++	++++	++++	++++	++++	++++
Swine	{PR8	0	+	++	+++	++++	++++	++++	++++	++++
	{Lee	+	++	+++	++++	++++	++++	++++	++++	++++
	{Swine	0	0	0	0	0	+	+	+	+

tion of serum used was 1:8 in terms of final concentration after the red cell suspension had been added. The amount of virus put in each tube was four times the quantity needed to cause a ++ agglutination in the absence of inhibiting serum.

The results are shown in Table 2.

Significantly higher titers in the second or convalescent serum samples, as compared with the first of "acute" samples from the same patients, were found against the PR8 strain and the swine virus. In ten cases a fourfold increase or more was observed against the PR8 strain and in 11 cases a similar significant rise in titer against the swine virus was observed.

Eight sera showed a significant rise against both A and swine virus, 5 sera against only one of them, and in another 5 sera no significant rise in titer against any of the strains was detected.

No significant rise in titer against the B strain was found.

#### DISCUSSION

The influenza epidemic that occurred in England and America in the fall

of 1943 has been rather intensively studied.<sup>2-6</sup>

It seems to be generally agreed that A strains of influenza virus were predominant, as virus was isolated on numerous occasions and found to have the characteristics of the A strains, and a rise in antibody titer was observed against A virus but not against B strains.

No reports of titrations of antibody against swine virus in sera from this epidemic have come to our notice.

In our material a rise in titer that must be considered significant occurred against both the A strain and the swine virus. It seems to be established beyond doubt that the viruses were correctly labeled. The entire series of sera were titrated twice against both the PR8 and swine viruses with practically identical results.

Three possible explanations suggest themselves. The first is that a strain immunologically related to both the swine and the PR8 strain employed was responsible for the epidemic. Unfortunately no virus was isolated from the

TABLE 2

*Titration of Antibody Against 3 Strains of Influenza Virus in Acute and Convalescent Sera from 18 Cases of Clinical Influenza*

Case	Titer Against A Strain		Titer Against B Strain		Titer Against Swine Virus	
	First Sample	Sec. Sample	First Sample	Sec. Sample	First Sample	Sec. Sample
1	1/32	1/64	1/128	1/256	1/16	1/256
2	1/64	1/64	1/256	1/512	1/256	1/512
3	1/128	1/2,048	1/1,024	1/1,024	1/256	1/2,048
4	1/64	1/2,048	1/256	1/512	1/16	1/16
5	1/16	1/1,024	1/64	1/64	1/8	1/32
8	1/128	1/512	1/256	1/256	1/64	1/64
9	1/32	1/64	1/128	1/128	1/256	1/256
10	1/16	1/32	1/512	1/512	1/256	1/256
12	1/8	1/256	1/512	1/256	1/8	1/64
13	1/16	1/128	1/512	1/1,024	1/128	1/512
14	1/16	1/32	1/128	1/64	1/128	1/2,048
15	1/16	1/32	1/512	1/256	1/128	1/1,024
17	1/64	1/512	1/512	1/512	1/1,024	1/2,048
18	1/16	1/128	1/128	1/128	1/256	1/1,024
19	1/128	1/128	1/256	1/256	1/128	1/128
20	1/32	1/128	1/256	1/256	1/256	1/2,048
21	1/32	1/512	1/128	1/256	1/32	1/128
22	1/32	1/64	1/256	1/256	1/256	1/256

Figure 1 shows the number of reported cases of influenza and of "catarrh. resp. ac." during the epidemic in Reykjavik

epidemic in Iceland so this possibility cannot be directly tested experimentally.

Horsefall and Rickard<sup>9</sup> and others have reported a significant rise in titer against swine virus in epidemics of virus A influenza. It has been suggested that an antigenic relationship is responsible for such rises in titer against the swine virus. Recently swine influenza virus strains have been isolated in Great Britain that seem to be antigenically related to the influenza A (PR8) virus.<sup>7,8</sup> These findings indicate that strains exist which combine in their antigenic make-up properties of both A strains and swine virus.

In our material a significant rise in titer against one virus only occurred in 5 instances: 3 times against the swine virus and twice against the A strain. This fact may seem to contradict the idea that one single strain of virus was responsible for the outbreak, but might be explained as follows: It is well known that in an epidemic of influenza a considerable percentage of cases of clinical influenza may fail to show a rise in antibody titer to the responsible virus strain.

In two cases that have come to our notice, influenza virus has been isolated from patients who did not show a rise in antibody titer during the course of their illness.<sup>5,10</sup> From the work on the antigenic relationship of influenza virus strains we have to assume that a given strain contains several different antigenic components, probably in different proportions, but some of them in common with other related strains.

Let us call some of these antigens in a given virus particle X, Y, etc. It is known, as previously mentioned, that influenza virus may fail to elicit any productions of antibody in case of influenza. It is reasonable to expect that in other cases a response to antigen X only is provoked or to antigen Y only. If antigen X represents the relationship

of the given strain to the A virus for instance, a case with high antibody to antigen X would be classified as a probable case of A virus infection. If antigen Y represents the relationship with swine virus, a case with high antibody to Y antigen would be considered suspect for swine virus infection, especially if the response to antigen X at the same time were weak.

It is even possible that an infection with strain A may provoke a response to antigen Y only, and thus mimic a swine virus infection.

Similar explanations have already been offered by Bodily and Eaton<sup>11</sup> to account for immunological cross-reactions encountered in their studies on different strains of influenza virus.

The second possibility is that two strains of virus were prevalent in this epidemic, one of them related to or identical with the A strains and the other related to or identical with the swine virus. It might then be assumed that they sometimes occurred together in the same individual, as 8 of our cases showed a significant rise in titer to both A and swine viruses.

An explanation along similar lines was made by Hammon and Howitt<sup>12,13</sup> with regard to western equine encephalomyelitis virus and St. Louis encephalitis virus, in outbreaks of encephalitis. They suggested that the two viruses were responsible for epidemics of encephalitis that occurred in the Yakima Valley in the summer of 1940 and in the Yakima Valley and in Arizona in 1941. Their evidence suggests the possibility that both WEE virus and St. Louis virus may be present in the same epidemic and even in the same patient, as they found in two of their cases a rise in antibody titer, that they considered significant, to both viruses.

The third possible explanation is that the rise in titer to one of the viruses is "anamnestic," or that the infection with one of the strains furnished nonspecific

stimulus to the renewed production of antibody to the other strain. It would then have to be further assumed that the persons in question had recently gone through an infection with the other strain.

This possibility however, should, we believe, be entirely disregarded for several reasons. The main reason is that the rise in titer is fairly high and is about equal for both viruses. The general experience with viruses seems to be that any considerable rise in antibody titer occurs only during actual infection with the virus, or related viruses, or after immunization.

It seems to us that, before the second or third explanation could be accepted, very strong direct evidence for their validity should be forthcoming, although the occurrence of mixed epidemics is a very interesting possibility that should be kept in mind.

#### SUMMARY

An epidemic of influenza occurred in Iceland in October and November of 1943. Attempts to isolate virus by inoculations in chick embryos were unsuccessful.

Using Hirst's agglutination technic, a significant rise in antibody titer against A strain and a swine virus strain was found in the sera of a majority of 18

cases studied. No rise in antibody titer against a B strain (Lee) was found. The possible significance of these findings is discussed.

#### REFERENCES

1. Hirst, G. K. The Quantitative Determination of Influenza Virus and Antibodies by Means of Red Cell Agglutination. *J. Exper. Med.*, 75:49, 1942.
2. Andrewes, C. H., and Glover, R. E. The Influenza "A" Outbreak of October-December, 1943. *Lancet*, II:104, 1944.
3. Donnelly, T. H., Hughes, H. P., Robertson, D., and Philips, E. Influenza "A"; Account of Minor Epidemic. *Brit. M. J.*, 1:42, 1944.
4. Salk, J. E., Menke, W. J., and Francis, T., Jr. Identification of Influenza Virus Type A. Current Outbreak of Respiratory Disease. *J.A.M.A.*, 124:93, 1944.
5. Adams, J. M., Thigpen, M. P., and Rickard, E. R. An Epidemic of Influenza A in Infants and Children. *J.A.M.A.*, 125:473, 1944.
6. Hirst, G. K. Direct Isolation of Influenza Virus in Chick Embryos. *Proc. Soc. Exper. Biol. & Med.*, 58:155, 1945.
7. Glover, R. E., and Andrewes, C. H. The Antigenic Structure of British Strains of Swine Influenza Virus. *J. Comp. Pathol. & Therap.*, 53:329, 1943.
8. Hudson, N. P., Sigel, M. M., and Markham, F. S. Antigenic Relationship of British Swine Influenza Strains to Standard Human and Swine Influenza Viruses. *J. Exper. Med.*, 77:467, 1943.
9. Horsfall, F. L., Jr., and Rickard, E. R. Neutralizing Antibodies in Human Serum After Influenza A. *J. Exper. Med.*, 74:433, 1941.
10. Francis, T., Jr., Magill, T. P., Rickard, E. R., and Beck, M. D. Etiological and Serological Studies in Epidemic Influenza. *A.J.P.H.*, 27:1141, 1937.
11. Bodily, H. L., and Eaton, M. D. Specificity of the Antibody Response of Human Beings to Strains of Influenza Virus. *J. Immunol.*, 45:193, 1942.
12. Hammon, W. McD. Encephalitis. Eastern and Western Equine and St. Louis Types, Observed in 1941 in Washington, Arizona, New Mexico and Texas. *J.A.M.A.*, 121:560, 1943.
13. Hammon, W. McD., and Howitt, B. F. Epidemiological Aspects of Encephalitis in the Yakima Valley, Washington. Mixed St. Louis and Western Equine Types. *Am. J. Hyg.*, 35:163, 1942.

## Resolutions Enacted by the United States Conference of Mayors

Among the resolutions adopted by the United States Conference of Mayors in annual conference, December 10-12 were the endorsement of the general objectives of the General Housing Bill of 1945 (S. 1592); the petitioning of Congress to enact legislation providing for 100,000 temporary family housing units and urging that such temporary housing units be operated and ad-

ministered by city housing authorities or other appropriate agencies of municipal government; the petitioning of Congress to extend the expiration date of the Emergency Rent Control Act until the present housing shortage is corrected; and urging the adoption of a program of federal aid to municipalities for hospital construction, expansion, and modernization.

# Public Health Field Experience

BENJAMIN G. HORNING, M.D., F.A.P.H.A.

*Field Director, W. K. Kellogg Foundation, Battle Creek, Mich.*

THERE is general agreement among persons concerned with the education of public health personnel that their preparation should include a period of field experience as well as academic training. There are a number of schools which provide good academic training, including the 9 schools of public health and the 31 schools which offer accredited programs of study in public health nursing. In contrast with the fairly extensive academic resources, satisfactory field training facilities for public health personnel and professional students are extremely limited.

For the purpose of this discussion, field experience will be divided into three types. The first is provided concurrently with and is coördinated with the academic courses of the professional school. This experience may be through observation, limited program participation, or a combination of both. It provides the student with an opportunity to observe and to make prompt practical application of information gained through classroom work. The area used serves as a field laboratory for faculty and students, and should be located near the school. The second type of field experience consists of periods of observation and orientation planned for visitors, students, or newly employed personnel. Recipients of this type usually do not participate in the program. It would seem advisable for each state to have facilities with which to provide this experience. The third type of training is supervised field work. This paper is concerned for the most

part with this kind of experience.

"Supervised field work for public health students" is a phrase used to describe a learning experience planned for students whereby they become supplementary health department staff members, assume responsibility, and participate in the program, but work under supervision. Students are assigned to the agency by the professional school for a specified period of time. It is comparable to the internship required for medical graduates. Such experience is a requirement of the 31 professional schools which provide accredited programs of study in public health nursing and of one school of public health for health education students preparing for the Master of Public Health degree. Other schools preparing public health personnel usually advise such experience although it is not as yet a degree requirement. In a few areas attempts have been made to provide supervised field work concurrently with the academic courses. This is generally not practical, because the field training facilities adjacent to the school can supply satisfactory experience for only a small number of students and because it is difficult for the official agency to assign real responsibility to students working on a part-time basis. For these and other reasons to be discussed it is believed that field work concurrent with academic work should be provided but that it should not take the place of the "block of full time" or internship type of supervised field experience.

# MICHIGAN COMMUNITY HEALTH PROJECT FIELD TRAINING CENTER \*

The Michigan Community Health Project, initiated in 1930, is a coöperative undertaking of the W. K. Kellogg Foundation with state and local agencies, and the people of seven counties in southwestern Michigan. During the early years of the project, many types of continuing education courses and workshops were provided; one of the objectives of these was to develop professional and lay leadership and to motivate persons to study and to take part in the solution of their own problems. Frequently such educational procedures were carried on in coöperation with professional schools and universities. As the various programs were developed, such schools encouraged selected graduate students to visit the area in order that they might observe and take part in the various community activities. The number of students seeking such experience increased rapidly and it soon became evident that there was a real need for field training

W. K. Kellogg Foundation took the initiative in developing a field training center for public health personnel and students in the seven counties of the Michigan Community Health Project.

The development of the present programs of the Field Training Center has been an evolutionary process. The experience with students during the early years served as a basis for establishing administrative patterns and standards, and for developing learning experiences to meet the individual needs of professional students. By 1937, programs had been developed for public health administrators, public health nurses, and public health engineers. Since that time field experiences have been arranged for dentists, health educators, hospital administrators, and veterinarians. For the nine fiscal years ending August 31, 1945, a total of 445 public health students have had 8,002 weeks of supervised field work, or an average of 18 weeks each. The number of weeks by type of professional student will be found in Table 1.

TABLE 1  
*Michigan Community Health Project Field Training Center*

Students		Weeks of Supervised Field Work by Fiscal Years										Average per Fellow	
		Number	1936- 1937	1937- 1938	1938- 1939	1939- 1940	1940- 1941	1941- 1942	1942- 1943	1943- 1944	1944- 1945		Total
Type													
P. H. Physicians	16	35	169	192	299	39	1	0	3	82	820	51	
P. H. Dentists	4	0	0	59	56	61	0	0	0	0	176	44	
P. H. Nurses	199	0	13	620	211	303	304	348	655	377	2,831	14	
P. H. Engineers	181	96	1,070	1,108	768	340	108	0	24	31	3,545	20	
P. H. Educators	30	0	0	0	0	0	0	0	70	209	279	9	
Hospital Administrators	7	0	0	0	0	0	89	123	52	5	269	38	
Veterinarians	8	0	0	0	0	0	0	0	0	82	82	10	
Total	445	131	1,252	1,979	1,334	743	502	471	804	786	8,002	18	

centers where professional schools could send their students to apply under supervision the theoretical knowledge which they had acquired during the academic years. This need was especially great in the field of public health, and after due consideration the

In addition to supervised field work, observation and orientation experiences were provided for large numbers of students, newly employed public health personnel, and distinguished visitors from the United States and abroad during this period. The total student weeks of all types of experience provided for the fiscal year ending August 31, 1945, will be found in Table 2. It

\* Allegan, Barry, Branch, Eaton, Calhoun, Hillsdale, and Van Buren Counties

TABLE 2

*Michigan Community Health Project Field Training Center Activities, 1944-1945*

Profession	Supervised Field Work		Orientation Observation		Combined Total	
	Persons	Weeks	Persons	Weeks	Persons	Weeks
Physicians	2	82	23	29	25	111
Dentists	0	0	42	41	42	41
Nurses	42	377	48	51	90	428
Health Educators	20	209	36	28	56	237
Engineers	3	31	13	42	16	73
Veterinarians	8	82	0	0	8	82
Hospital Administrators	1	5	40	17	41	22
Total	76	786	202	208	278	994

will be noted that 278 persons were provided with 994 weeks of training. Of the total student weeks, 786 were of supervised field work and 208 were of observation and orientation experience.

The Field Training Center in this area is now a joint undertaking of the seven local health departments, Michigan Department of Health, the professional schools using the area, and the W. K. Kellogg Foundation. Representatives of these agencies plan the activities jointly. Programs are flexible, and the experience of each student is individualized on the basis of past experience, education, and needs. The student who comes into the area for supervised field work becomes a supplementary health department staff member. After a short period of health department and community orientation, he takes an active part in the program. At first his work is closely supervised, but as he becomes more experienced he requires less direct supervision and participates actively in the service program. The primary objective for the student is a good educational experience. To achieve this the agency staff and student must of necessity provide a high quality of community service.

The W. K. Kellogg Foundation thus far has assumed full financial responsibility for the teaching program of the field training center of the Michigan Community Health Project area. Now that such training has been recognized

as an essential part of the preparation of public health personnel, it is hoped that funds with which to provide field experience will be available from official sources. In this area the cost of field training is being determined. For example, it has been found that the weekly cost of supervised field work for public health nurses for periods not exceeding 12 weeks ranges from \$15 to \$25, depending upon the length of the experience, whether or not the field teacher supervises more than one student, and other factors. This figure does not include travel or living expenses of trainees. It should be pointed out, however, that after a short time the student begins to give independent service and usually becomes an asset to the program. Those students remaining for a period of more than 3 months require little more supervision than the average staff member. The most expensive field experience provided in this area is that of planned observation for foreign doctors of medicine. It averages \$80 per week.

The amount of funds necessary to administer the student program is estimated by the county director of health on the basis of personnel costs, student quotas, and other factors, and the W. K. Kellogg Foundation makes an annual grant directly to the county health department for this purpose. The W. K. Kellogg Foundation is also assisting a limited number of other states in extending their field training facilities.



In such states the grant is made to the state department of health to be allocated to the local field training area.

#### DISCUSSION

The extent of field training facilities in the United States is unknown at present and the total need has not been determined. An unpublished study\* for the year 1941 revealed that a total of 533 public health students received supervised field work. This number utilized all of the desirable field training facilities available at that time. The professional schools in need of field training facilities for their students include the previously mentioned 9 schools of public health and the 31 schools providing accredited programs in public health nursing. In addition, schools of medicine, dentistry, basic nursing education, engineering, hospital administration, and veterinary medicine each year request field experience for selected students. For example, 27 schools of engineering have sent students to the Michigan Community Health Project field training center for supervised field work. With the increased number of public health personnel to be trained in the immediate post-war period, it is obvious that there is an insufficient number of field training facilities at present.

From the experience in Michigan and elsewhere it would seem that the place selected for a generalized field training program for inexperienced public health students should represent a typical cross-section of the area in which they expect to work. The first experience usually should be with an official agency. In the case of the nursing student it should provide an opportunity for her to make the transition from hospital to public health nursing through the use of her bedside skills. Unfortu-

nately this is not possible at present for the majority of students, because most official agencies have not yet accepted the responsibility for bedside nursing, and it becomes necessary for inexperienced nursing students to have their first experience with visiting nurse associations.

The health department staff should be adequate in number and preparation to care for both the service and the teaching programs. It has been demonstrated that in order to maintain a good service program in the average community there should be a minimum of (1) a qualified medical health officer, (2) one nurse of supervisory level for 5 to 10 staff nurses, (3) one staff nurse per 5,000 people, (4) one public health engineer per 25,000 persons, and (5) a health educator for units of 50,000 population or more and for units used as field training centers. For the larger population units additional medical personnel will be needed. Also one nurse per 5,000 population will not be sufficient if more than demonstration bedside nursing is planned. The experience in the Michigan Community Health Project area indicates that field teachers should be selected from the service staff on the basis of demonstrated teaching ability. The staff member will be able to give less service to the community while engaged in field teaching; therefore, the size of the staff should be increased sufficiently to compensate for the time given to the student program.

The staff members of a health department in an area used for a student program should be selected with care. They should be qualified by education and experience, and they should be mature, emotionally stable, and sensitive persons. It should be remembered that the health officer may administer an effective service program and yet be unsuccessful with a student program. Likewise, a public health nurse may

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\* McGavran, E. G. Preliminary Data on Rural Field Training Centers.

provide an excellent generalized service for her district but may not have the necessary qualifications for the guidance of students.

The basic program of the health department should be well planned and developed. For example, it would be unwise to assign a young student for generalized experience to an area with excellent venereal disease and tuberculosis control activities, but with a poorly planned maternal and child health program. Such areas are suitable for mature individuals with previous generalized experience, but not for inexperienced students. Just as a young doctor should have his internship in a hospital where good medicine is practised so should the first experience for public health personnel and students be in an area where good public health is practised.

Field training areas should be approved formally on a national basis by some professional body very much as hospitals are approved for internships. It would seem logical that this should be the responsibility of the national societies of the various professional personnel or the American Public Health Association. The basic service and student program standards and health department staff qualifications should meet with the approval of the professional schools and official health agencies.

There is general agreement among persons active in the training of public health personnel that all types of students should have supervised field experience, but there is a difference of opinion as to how long the period should be for certain types. In the Michigan area the requested periods for supervised field experience range from six weeks to one year. It would seem that when the teaching of public health has been properly and sufficiently integrated into the undergraduate professional curricula, public health personnel

should receive their supervised field experience as first-level staff members or internes with health departments which have been approved as field training areas. This is impossible now, however, because of lack of a sufficient number of such areas. The internship type of experience has the added advantage that students receive sufficient salary with which to pay for living expenses while receiving supervised field work.

The general supervision and coordination of field training areas should be the responsibility of the state department of health assisted by the local health department and the professional schools using the area. This assumes that there should be state department of health personnel qualified for such responsibilities. The field teaching program should be planned jointly by state and local health departments and the professional schools. It should meet national standards as well as those of the professional schools. The field training program should be administered by the staff of the local health unit. The responsibility for coordinating field and academic programs should be delegated to one or more persons who would ordinarily be on the staff of the state department of health. In the Michigan Community Health Project area such persons are on the staff of the W. K. Kellogg Foundation. However, all programs are discussed regularly with representatives of the Michigan Department of Health. The plan used for coordinating academic and field work is similar for all types of students: The program coordinators visit the schools using the area, become familiar with the academic curricula, meet the students, and review their past experience, education, and future needs. As the coordinators know the resources of the area, it is possible for them to assign the students to the county and the field teacher best suited for their

individual needs. The coördinators continue to serve as resource persons to health department staff members while the students are in the area. A faculty member of the school usually visits the area while the students are in residence.

At present requests for supervised field work in the field training center of the Michigan Community Health Project area are directed to the W. K. Kellogg Foundation by the professional schools using the area. The procedure followed in certain states is for the professional schools to make all requests to the state department of health coördinators who in coöperation with the staff of the local unit assign students according to their needs.

The citizens of the United States have a vested interest in public health personnel. The education of such personnel is expensive. Professional schools know the approximate cost of academic training, but there are very few data available concerning the cost of providing field experience. As previously mentioned, a careful study is being made in the Michigan Community Health Project area to determine the cost of such training for each type of student. The results will be reported in the future.

Since the main source of the budget for academic education in state supported schools is tax funds, it would seem reasonable that such funds should also be made available for field training. It must be remembered, however, that professional schools usually provide training for public health personnel

from several states, and that it would not be fair to ask the citizens from one state to finance field experience for personnel who are to be employed elsewhere. For this reason it would seem that federal funds should be provided to pay for the major part of the field training of public health personnel. The administrative procedure for the allocation of federal funds to the local level for public health purposes is already established. Federal funds are granted to states which in turn reallocate them to local health departments for specific purposes. This same plan could be used for the distribution of funds by the U. S. Public Health Service to help provide field training facilities in the various states.

#### SUMMARY

One of the major problems now facing persons and schools interested in the education of public health personnel is that of providing satisfactory field experience. It is urgent that a comprehensive study of the entire problem be made. Some of the questions to be answered are: (1) What are the present field training needs and resources for public health personnel and students in the United States? (2) What are desirable standards for field training areas and how should they be established? (3) Should field training areas be approved nationally and, if so, by whom? (4) How should field training areas be administered? (5) How much does it cost to provide field training? and (6) Who should pay for field experience?

# Public Health Nursing Field Experience

MILDRED L. TUTTLE, R.N.

*Nursing Director, W. K. Kellogg Foundation, Battle Creek, Mich.*

AS has been indicated in a previous article,<sup>1</sup> seven county health departments<sup>2</sup> in southwest Michigan are being used by professional schools for supervised field practice in public health. During a two year period (1943-1945), a total of one hundred nurses had field experience in these agencies. The material for this article is based upon an analysis of the needs of this group of nurses.

At the present time there are 31 universities or colleges having a program of study for graduate nurses in public health, approved by the National Organization for Public Health Nursing. All students are required to have field experience in a public health agency as an integral part of this program. In 1943-1944 the following 173 agencies<sup>3</sup> provided field experience to the students enrolled in the 31 approved programs of study in public health nursing:

County health departments....	112
Visiting nursing associations...	34
City health departments.....	14
Boards of education.....	8
Joint services.....	3
Teaching centers.....	2

On January 1, 1945, a total of 18,701<sup>4</sup> nurses were employed by service agencies. This included 10,638 nurses employed by official health agencies, 4,321 by local boards of education, 4,742 by local nonofficial agencies.

The U. S. Bureau of the Census has recently given the population of our country as 140,000,000. On the basis of the present minimum standards of one nurse to 5,000 persons, there should

be 28,000 nurses in public health agencies. It is obvious that professional programs of study in public health nursing need to recruit many additional students. Increased enrollments will increase the need for field experience in public health agencies. The current expansion in prepayment insurance plans for medical care also offers another reason to anticipate a demand for more nurses for whom satisfactory field experience must be provided by the schools.

Study is needed to determine the ability of the 173 agencies now offering field practice to meet the anticipated demands both qualitatively and quantitatively. Although such a study was begun in 1943, war activities hampered its conclusion. The study should determine how nearly the student fields meet the usual standards for local health practice, and review the professional qualifications of the various members of the agency staff responsible for directing the educational program for students.

Further study of field agencies should determine how adequately they are meeting the standards and objectives of field experience as outlined by the professional schools. To date there has not been a country-wide job analysis of the usual positions for which public health nurses are being prepared. Such analysis, followed by a division of responsibility between the professional school and the field agencies, would help provide the objectives of field experience for the average student, with variations for particular schools, and

for individual students who could then proceed from a base line in orderly fashion. Analyses made at the same time for each member of the public health team—the health officer, nurse, engineer, health educator, and others—would be of even greater value in clarifying responsibilities and in outlining the objectives of field practice.

The professional schools and the field agencies selected by them for student practice must work as a team so that students will benefit from an integrated educational program of study. Teaching materials from the field agencies should be utilized more fully in the classroom so that principles and practices may be more closely related. The field agencies have a responsibility to the professional schools to provide the kinds of materials which will have value to the classroom instructor. A greater degree of continuity between the professional schools and field agencies is possible when there is a public health nurse-educator responsible for coordinating the program of the school and field. The coordinator brings together all of the factors involved in planning, executing, and evaluating field practice. The effective coordinator will know the content of the academic classes in the professional school, and she will know what each field agency has to offer to students. Until national standards are developed which can be used for accrediting field agencies for student field experience, the professional school must assume this responsibility.

The professional school should expect to find the following conditions present within the field agency:

1. A service program designed to meet the needs of the community according to accepted standards for local health service
2. Community interest, participation, and support
3. Qualified personnel
4. Educational opportunities for all staff members

5. Satisfactory personnel policies and practices

6. Democratic administration

7. Good staff relationships

8. Interest of the entire staff in the student program

The leadership and vision of the public health nursing supervisor in the field agency determine to a large extent the quality of experience which students will have. The supervisor should be well prepared in the basic areas of public health nursing, and it is desirable for her to have additional preparation on an advanced level. To avoid using all supervisory time in a student program and to make use of the great opportunity for developing the capacities of staff nurses, student advisement in public health nursing is frequently assigned to superior staff nurses. It is a fundamental requisite that the supervisor should be sensitive to the dual rôle of guiding the staff nurse in the service program of the agency and of helping her to translate the principles which she uses in working with individuals and families to comparable principles of guidance in working with students.

The selection and preparation of staff nurses for student advisement or guidance is a matter for serious consideration. It should be a prerequisite that the nurse selected to interpret public health nursing to students be an experienced worker, and have demonstrated an ability to work effectively on a professional level in the various areas of public health nursing. It is essential that she should have worked in a nursing district at least 6 months, preferably a year, to provide her with a thorough knowledge of the district and the families in the area. This knowledge is needed if she is to select the kinds of field experiences which will most adequately meet the individual needs of students. It is also essential that the nurse should be in the agency this length of time to enable the super-

vising nurse to work with her, to share field visits, and to utilize fully the conference method of guidance. The supervisor will appraise the effectiveness of the work and observe the methods used by the nurse in her contacts with individuals, families, and community. During this time the supervising nurse also has an opportunity to exemplify the quality of guidance which she expects the staff nurse to use when working with students. The preparation of student advisers should be carefully planned so that the nurse is introduced gradually to the responsibility of guiding students, first as an observer and later as an assistant. Through gradual introduction and planned preparation, the staff nurse develops a sense of security in working with students.

Before students begin their field experience, the coördinator visits the agency for the purpose of meeting with members of the staff who will be responsible for the students while they are in the field. The coördinator reviews the background of each student and makes tentative plans for her field experience on the basis of previous professional preparation, experience, interests, and needs. Upon arrival in the field agency, the student is introduced to an adviser who has been carefully selected for that particular student and who will be responsible for planning, interpreting, and evaluating the experiences of the student throughout her entire time in the field agency.

During the time students are with the agency, conferences for the evaluation of progress are held. Among those present are the coördinator, the supervising nurse, and the student advisers. The conference is based on the factual information contained in the adviser's cumulative record kept for each student and upon the narrative reports written by the students. The objectives for each student are reviewed in relation to

the experiences which she has had or which she still needs. These conferences provide an indirect opportunity to the coördinator and supervisor to appraise the effectiveness of the adviser's work with students. Each adviser will receive help from the coördinator and supervisor and from the other advisers in ways to improve her skills in selecting, guiding, interpreting, and analyzing the experiences planned for the student.

Student advisers who are good family teachers will find the conference method of guidance easily transferable to work with students. Sharing experiences in the field and discussing them afterward in conference is a stimulating experience for both the students and the advisers. Shared experiences may be visits to a home, school, library, social agency, physician's office, or a community meeting. Before the field visit is made, the adviser and student prepare for the experience by reviewing all pertinent information, agreeing on the objectives, and making tentative plans. Upon completion of the visit, the adviser and student analyze, evaluate, and record the visit.

The group conference in which a family situation is discussed is a guidance method which should be more generally used in field agencies. It is an educational opportunity for students to participate in the group conference in which a member of the agency staff presents a family situation for group analysis and study. Usually the nurse presenting the situation is seeking help from the group in making a more complete analysis of the needs within the family and the ways in which the nurse can be of greatest service.

Evaluation of the student's adaptability and growth should take place whenever the student and adviser discuss field experiences. The final conference should be a summarization of the entire experience and should emphasize the student's growth during the

time she has been in the field agency. Attention should be given, currently and on the conclusion of the experience, to the areas in which the student is weak and will need further help in order to render more adequate service to individuals, families, and community.

Study of the student program in the seven county health departments in southwestern Michigan has indicated the need to consider more carefully the type of field experience which will give added meaning and deeper insight into the opportunities for service in public health nursing. The seven counties follow the general objectives outlined by the professional school<sup>5</sup> as a base line for planning field experiences for students:

*Objectives*—The specific objectives of field experience will vary according to the preparation, past experience, interest, and ability of the individual student. Careful selection of experiences is necessary if she is to have enough practice in applying public health theory to a practical situation to acquire any competence as a public health nurse. In general, it is more important for her to follow a few families, or projects than to have every type of experience.

In general, the student should gain from rural field experience:

1. An appreciation of the concept of family health work and increasing ability to give family health guidance.
  - a. Some ability in analyzing a family health situation, recognizing the resources and needs of the family, and seeing the relationship between health, economic, environmental, social, and psychological factors.
  - b. Awareness of the family as a unit, sensitivity to family relationships, and appreciation of the relationship between the family and the community.
  - c. Ability to plan and carry out a home visit.
  - d. Ability to record a family health visit.
  - e. Ability to evaluate her work with families and plan for improvement.
2. Ability to carry out procedures required of a public health nurse.
  - a. Skill in making home visits—approaching the individual and family, giving
- the supervising nursing care in a rural situation as a representative of an official agency, and teaching health.
- b. Ability to establish good relationships and work coöperatively with other agencies and workers.
- c. Ability to put principles of public health nursing into practice.
- d. Ability to participate in the school program as a consultant.
- e. Ability to participate in group discussion and possibly have some experience as a leader.
- f. Skill in testing vision and hearing and in observing children; experience in assisting with clinics and with immunization, and other communicable disease programs, etc.
3. Some experience in studying a community and determining its health resources and needs.
  - a. Knowledge of sources from which pertinent information can be secured.
  - b. Ability to collect and interpret information about a community.
4. Acquaintance with resources and organizations which are found in a rural community and an understanding of the nurse's relationship to them.
  - a. Acquaintance with rural health, social, economic, and occupational problems.
  - b. Understanding of farm life and rural attitudes.
  - c. Ability to work with limited facilities.
  - d. Ability to utilize established groups and work with volunteers and lay committees.
  - e. Understanding of the functions of state agencies and ability to work with them.
  - f. Appreciation of the problems of the rural physician, teacher, social worker, county agency, etc., and ability to co-operate with these workers.

(Visits to community agencies are usually limited to those in behalf of individuals or families with whom the student is working. General excursions are of doubtful value.)
5. Some understanding of local government and the functions of public officials.
6. Understanding of the place and functions of a local health department, its organization and support, and the responsibilities and relationships of the various personnel.
  - a. Understanding of the legal obligations and limitations of the health department.

- b. Understanding of the relationships of the health department to schools, private physicians, and dentists, and to county officials, and state agencies.
  - c. Understanding of the communicable disease program.
  - d. Ability to work effectively with all health department personnel.
7. Program planning.
- a. Ability to plan a program for a day, week, month, and year on the basis of health needs and available nursing time.
  - b. Ability to select cases and plan visits effectively.
  - c. Opportunity to observe and possibly participate in group work, classes, clinics, and school health programs.
8. Professional development.
- a. Opportunity for the student to determine her own qualifications for an interest in rural public health nursing.
  - b. Development of the student's ability to evaluate her own work.
  - c. An opportunity to experience constructive supervision and staff education.
  - d. Develop the student's ability to recognize her need for additional information and to use reference materials when necessary.
  - e. Appreciation of the need for continuous professional growth and the nurse's responsibility for her own education.
  - f. Develop good work habits and professional attitudes—promptness, ability to use time effectively, sense of professional responsibility.
- learning his responsibility for the organization and administration of the agency and its program.
  6. To have direct contact with the public health engineer and to visit with him in the field.
  7. To have direct contact with the health educator if there is such a worker in the agency.
  8. To work intensively with a few carefully selected families. Within these families opportunity will be provided for students to:
    - a. Give bedside nursing care.
    - b. Have additional experience in pediatrics with emphasis on normal growth and development.
    - c. Utilize the principles learned in parent education and family relationships.
    - d. Develop skills in interpretative recording.
  9. To have direct contact with community groups and to have experience in community organization.
  10. To plan, participate in, and evaluate group discussions.
  11. To see the place of the local librarian in a community program of health education and to work with the librarian on community education projects.
  12. To have direct contact with public health nursing consultants from the Michigan Department of Health and to utilize these resources in relation to specific field activities.
  13. To have experience in a field agency where staff relationships are built upon broad democratic principles.

The county health departments in southwestern Michigan which provide field experience are making additional contributions to the general objectives as set forth by the professional schools. Students will have an opportunity:

1. To see the entire agency in action and functioning as a unit.
2. To see the interrelationships of each working group within the agency.
3. To see the function of the agency in a community program and its responsibility for the overall planning to meet the total community health needs.
4. To have daily contacts with all members of the agency staff.
5. To have direct contact with the administrator of the agency for the purpose of

In making plans for the immediate future, the following questions need to be answered through further study of the existing practice fields:

1. To what extent will it be possible for the 173 agencies to provide field experience for more students?
2. Will it be necessary to develop additional field training centers, especially in rural areas? If so, where shall such centers be located?
3. To what extent is it feasible to consider internship in a qualified field agency which might replace the present arrangement for field experience?
4. What standards should be required of the agency before it is approved as a field teaching center?



5. How should field teaching agencies be accredited? and by whom?

6. Through what channels should the level of the present practices in field work be strengthened and improved?

#### REFERENCES

1. Horning, Benjamin G. Public Health Field Experience. *A.J.P.H.*, Feb., 1946, p. 135.

2. Allegan, Barry, Branch, Calhoun, Eaton, Hillsdale, Van Buren.

3. Collegiate Council on Public Health Nursing Education, National Organization for Public Health Nursing, 1790 Broadway, New York, N. Y.

4. *Facts about Nursing—1945*. Nursing Information Bureau, 1790 Broadway, New York, N. Y. (Includes U.S.A., Puerto Rico, Alaska, Hawaii, and Virgin Islands.)

5. University of Michigan, School of Public Health.

## Army Medical Forces of the European Theatre Prepare for the "Battle of the Winter"

From a strategy conference of United States medical officers in the European Theatre on November 16, 1945, word comes that "it is easily possible that the fate of more lives in Europe is at stake this winter than were lost due to the entire war." The conference was attended by nearly fifty American public health officers in the U. S. zones of occupation and the British zone of Germany, who are responsible for evaluating civilian health, and planning for public health programs and procedures so that disease and epidemics will not endanger the occupation forces or displaced persons.

Serious overcrowding presents the danger of epidemics of respiratory diseases. Hence "influenza watch stations" are being set up where cases and suspected cases will receive special laboratory and clinical study.

The shortage of experienced German public health personnel presents another problem. Denazification of the German health system has removed nearly 95 per cent of experienced public health officers, nearly 85 per cent of hospital personnel, and perhaps 50 per cent of doctors from private practice.

In October, diphtheria was the most prevalent among communicable diseases in the U. S. zone. Immunization of all preschool and school children up to the age of 12 has been instituted, as well as the improvement of diagnostic facilities and intensification of reporting, isolation, and treatment of cases.

During October, penicillin became

available for treatment of civilians with gonorrhea, which is second in order of prevalence. The supply of the drug will treat an estimated 225,000 cases. Its use is authorized only for the treatment of gonorrhea and its misuse severely punished. Other venereal disease control measures are: reporting of all cases, examination of all contacts and suspects, and treatment of all cases in civil venereal disease detention hospitals.

Scabies was the third most prevalent disease, due to lack of soap and personal hygiene facilities. It is hoped that supplies of benzyl benzoate will be available to supplant the usual German medications which are inferior in scabidical value.

Typhoid fever showed a slight decrease with improvement of sanitary control of water supplies, of sanitary facilities, and of food. Infectious dysentery has also been decreased by similar measures. Scarlet fever has been kept under control as has typhus fever, 8 cases of which were reported in October. DDT stockpiles have been delivered for disinfestation immediately when typhus is reported.

Among those attending the November conference were two Fellows of the Association, Major General Morrison C. Stayer of Carlisle, Pa., and Lt. Colonel W. A. Brumfield of Albany, N. Y., currently Chief and Venereal Disease Control Officer, respectively, of the Public Health Branch, Office of Military Government, U. S. Zone, Germany.

# Restaurant Sanitation in the South Pacific

CAPTAIN KEITH D. LARSON, SN.C., AUS

*South Pacific Base Command*

THE controlling of sanitation in civilian eating establishments can be accomplished by one of two methods: either by police enforcement of set regulations or by the usually more desirable method of education and coöperation. In the United States, a town which allows its restaurants to be operated in an insanitary manner can be put off limits, but on small islands of the South Pacific this is nearly impossible. Here on the island of New Caledonia, Noumea is the only large city. It is built around the chief harbor, and consequently all traffic must go through the town. Besides this, the recreational value of the town is inestimable, for "going to town" offers considerable relief from the otherwise monotonous life in army camps. When in town, men naturally eat French cooking.

The fact that many soldiers and sailors were eating in civilian restaurants was very evident; therefore, the Island Surgeon was faced with the problem of how best to control the sanitation of civilian eating establishments. Two apparent methods presented themselves. It could be accomplished by inspecting each establishment and putting "Off limits" signs on eating places which were assumed to be dangerous. This would necessitate a large MP and SP force to enforce the off limits, and would result in many arrests. Besides being difficult to enforce, this procedure would antagonize the local government and

reduce to zero the coöperation between the civilian and military health services.

The other method would be to make inspections and approve those establishments which met or could meet the minimum sanitary standards by making certain changes. Taking everything into account, it was felt that the educational method would be the more desirable, and plans were made to carry it out. As a guide for the armed forces personnel and as an incentive for the



FIGURE 1—Approved sign being placed at the entrance of a Noumea restaurant. All "Approved signs" were posted in the presence of the restaurant operator by a military policeman under the supervision of the Island Sanitary Inspector and his interpreter.

improvement of sanitation, each establishment that was operating in a satisfactory manner would then be loaned a large white "Approved eating establishment" sign (see Figure 1).

This educational method of sanitation control seemed to be psychologically sound, and experience has shown that to be the case. Presumably, this method of sanitary control would accomplish the following:

1. Aid the French Health Service in enforcing their sanitary regulations.
2. Stop the soldiers from eating in insubstantial food establishments. (This has not been entirely accomplished but the number eating in unapproved places is very few and becoming fewer daily.)
3. Encourage the French to improve the sanitation of their restaurants on a voluntary basis.
4. Give teeth to an educational program in restaurant sanitation.
5. Make possible the enforcement of a few armed forces regulations.

During the latter part of August, 1944, work was started toward the carrying out of the approved eating establishment program for the restaurants on this island.

As a first step, all French laws regarding operation of restaurants were obtained and were mimeographed in both French and English to be given to the French eating establishment operators. (See appendix 1—French Regulations for Sidewalk Cafes, and appendix 2 — Regulating Hygienic Measures Assumed for the Preparation and Sale of Food.)

An examination of these French regulations reveals them to be very complete. The regulations adequately cover all requirements for the proper operation of any eating establishment. As a matter of fact, the Ordinance and Code Regulating Eating and Drinking Establishment, as issued by the U. S. Public Health Service, is not so exacting as the French regulations.

Therefore, the Surgeon assumed that only regulations pertaining to the serv-

ing and handling of certain foods were necessary. For this purpose a letter of regulations (see appendix 3) was drafted and copies in both French and English were given to each establishment which either was on the "Approved list" or was trying to qualify for approval.

It was announced to all eating establishment owners that the "Approved signs" would be given out on October 12, 1944. Thus every establishment was given sufficient time to make the necessary changes for compliance. At the same time that the owners were informed of the date, notices were issued to all commanding officers of army and navy units to instruct their personnel to eat after October 12, 1944, only in places that displayed the "Approved sign." Since the first of January daily radio broadcasts over the armed forces broadcasting station (AFRS) in Noumea have been given advising armed forces personnel to eat only in approved eating establishments. These radio broadcasts have been very effective.

Insanitary practices which were stressed during the "pre-approval" inspections were:

1. That general cleanliness of the kitchen, dining rooms, latrines, and yards be satisfactory.
2. That there be adequate storage facilities for bread, pastries, and meat. Some form of screened-in space had to be furnished for the storage of bread, pastries, and exposed foods. (Figure 2 shows a typical box.) It was not required that mechanical refrigeration be furnished; nevertheless, many did have modern refrigerators (see Figure 3). Each establishment was required to have either mechanical refrigerators or ice boxes.
3. That adequate dish washing facilities be furnished. At first the use of boiling rinse water as a sterilizing agent for the dishes was considered satisfactory, but subsequent inspections revealed that the rinse water in most establishments was never hot enough. Consequently, a chemical disinfectant was recommended. It was also recommended that the dishes be washed in the following manner: first washed in warm soapy water; then



FIGURE 2—The kitchen of a Noumea restaurant showing arrangement of stove, cooking utensils, and screened-in cabinet in right hand corner. Bread and pastries are stored in bottom part of cabinet and dishes in the upper part.



FIGURE 3—Interior of a Noumea restaurant showing modern refrigerator for storing perishable foods

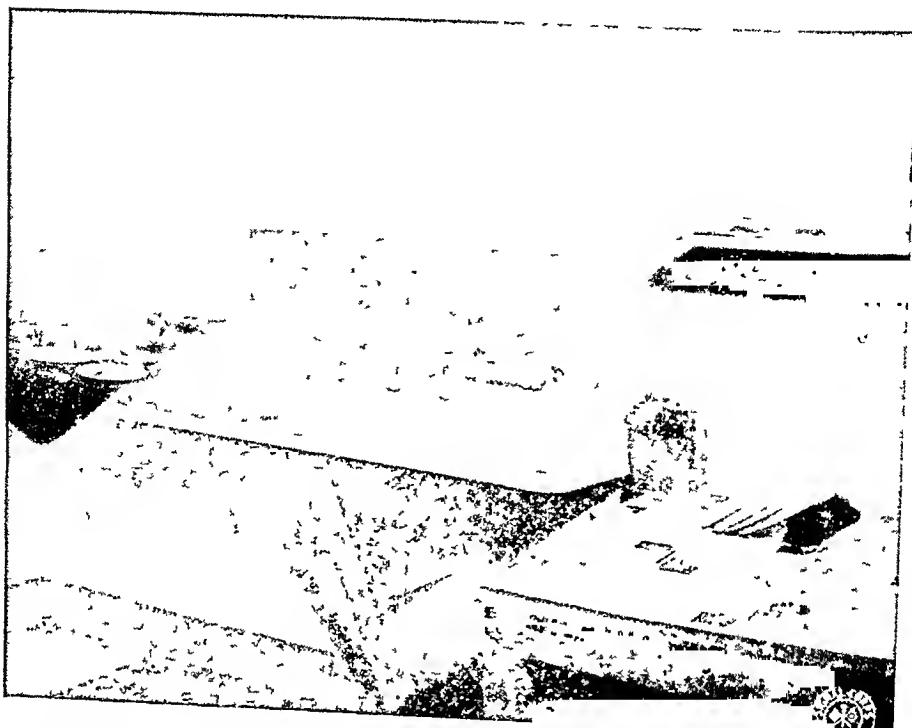


FIGURE 4—Typical improvised method of dishwashing in a Noumea restaurant using hot soapy water, rinse and disinfecting solution

rinsed in clear tap water; and finally allowed to stand for from 4 to 5 minutes in a strong chlorine solution. This was made by using 1 level teaspoonful of Calcium Hypochlorite (70 per cent available chlorine) in 20 liters of water. Following this sterilizing rinse the dishes were air dried. (Figure 4 shows an improvised setup which we feel is satisfactory.) The U. S. Army made available through Lend Lease 1,250 pounds of calcium hypochlorite for sterilization of dishes in restaurants and glasses in bars. The calcium hypochlorite was packed in convenient 5 lb packages with removable, tight fitting lids, and the entire supply was turned over to the local French Health Department for issue.

4. That the kitchen be fly proofed by screening all outside openings. Since there was little screening available locally, and most of the screening had to be furnished on Lend Lease, the screening of the dining rooms though desirable was not recommended. In a few cases after operators saw the advantage of screening the kitchens they also screened their serving rooms by obtaining the screen from non-military sources. For this purpose the U. S. Army made available on Lend Lease 3,000 ft of good grade wire screen which was then distributed by the local health officer.

5. That the latrines be fly and rodent

proofed. In many cases, this necessitated the building of a new latrine. (Figure 5 is of a latrine built to comply with these recommendations.) Besides the fly and rodent proofing of the latrines, it was required that each latrine be furnished with seat covers and automatically closing doors. The city of Noumea does not have a domestic sewer system. Most of the human waste is collected in pail type latrines and disposed of by emptying into the bay near the city dump. A few eating establishments have modern flush closets which empty into septic tanks whose effluent runs directly into the storm sewers and street gutters.

6. That all food handlers have an up-to-date French Carte Medicale Professionnelle (French Health Office Food Handlers Certificate), and that they renew the certificate every 3 months after a physical examination at the Dispensaire d'Hygiene Sociale Institut Gaston Bourret (the French Health Office Laboratories). The local health office gives a very thorough food handler's examination, checking on intestinal parasites, and all contagious diseases with the exception of venereal diseases. When the general physical examination reveals that a food handler has a venereal disease the health certificate is not granted.

7. That the establishment complies with all

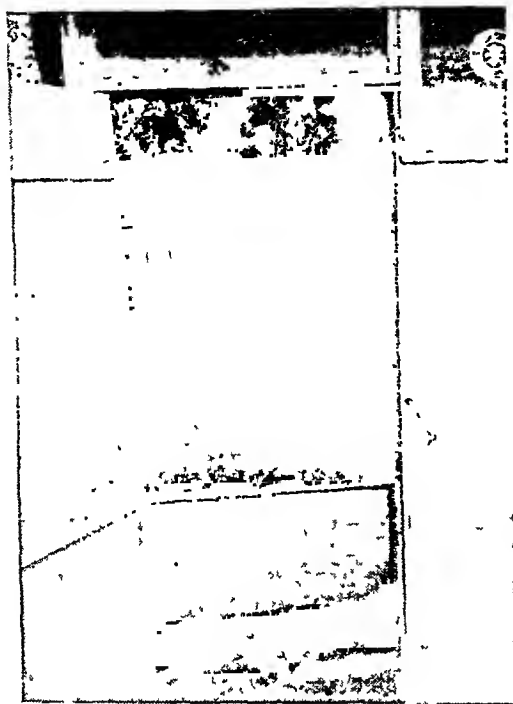


FIGURE 5—An example of a fly proof, sanitary pail type latrine which was constructed in compliance with recommendations for improving latrine facilities in order to qualify for the "Approved sign"

army regulations (see appendix 3). The French health officer asked that Regulation 1-b, "Serve no raw vegetables . . ." be changed to read, "Serve no raw vegetables except cucumbers and tomatoes." This request was considered by the Surgeon and he decided to allow the use of tomatoes and cucumbers if they were washed in boiling water and if the cucumbers were peeled. Those regulations which prohibited the serving of raw milk and inadequately refrigerated meat were enforced.

The results of this campaign have been very gratifying. It is impossible to list here all the things accomplished, but a few of the more apparent were:

1. The French health officers found that this program dovetailed with their educational program and gave their wholehearted cooperation. Dr. Tivollier, Le Medecin Commandant, Medecin du Bureau Municipal d'Hygiene, and representatives of the Surgeon meet weekly or oftener and discuss the program. On many occasions both the French and Army inspectors have gone on joint inspection trips. All recommendations, except those prohibiting the serving of

tomatoes and cucumbers, were enthusiastically supported by the local health officer.

2. The patronage in unapproved eating places was so reduced that eventually all establishments except one not receiving the approved sign went out of business.

3. The voluntary improvement of sanitation by the French was satisfactory. In August, 1944, there were 37 civilian eating places patronized by the armed forces. Of this group 24 received approved signs October 12, 1944; 5 did not receive approved signs; and 8 closed voluntarily rather than comply with the regulations. Of the 5 who did not receive signs, 2 received approved signs in November; 2 closed a few weeks later; and 1 is still operating with very small patronage.

4. The education program was effectively forced upon the shop keepers.

5. The enforcement of the armed forces regulations has been satisfactory. Two eating establishments had their "Approved signs" removed for a few days for infraction of certain French regulations. The managers of those establishments soon indicated that they wished to comply and to date have operated their restaurants satisfactorily. To give teeth to removal and return of the "Approved sign" all operators have been informed that no establishment will have a sign returned after the second removal.

The improvement of sanitation under the approved program of every restaurant and shop varied. Every restaurant showed some improvement; however, in order to indicate what was accomplished a rather thorough description of the changes of one establishment are given (see appendix 4).

#### SUMMARY

This paper describes the successful techniques of coöperation and education developed and used by the sanitary officers of a Surgeon's Section in the South Pacific. Though complicated by the different standards of a foreign culture, this sanitation program proved entirely workable throughout the period of the occupation of this island by the armed forces.

#### Appendix 1

##### FRENCH REGULATIONS FOR SIDEWALK CAFES

1. The floors, counters, and containers

should be washed thoroughly at least twice a day, using soap and hot water, walls washed daily.

2. The food handlers should have a quarterly examination by a competent physician (French).

3. If any of the help (food handlers) have any suspicious (contagious) infection or communicable disease they should be sent home, a doctor called, and the French authorities notified immediately.

4. They (food handlers) should wear clean clothes and their personal hygiene should be above question.

5. Only boiled water should be used in all their preparations.

6. Only powdered or evaporated milk should be used in chocolate drinks, ice cream, and any other preparation of food and drink.

7. The glasses, cups, saucers, or any other containers used for food be thoroughly washed first with boiling water and soap, then thoroughly rinsed with plain boiled water.

8. No food should be exposed; bread, cake and pies, etc., should be in an enclosed container or receptacle.

### Appendix 2

#### Translation

23 October 1943

#### ARTICLE 677—3 JUNE 1941

Regulating hygienic measures assumed for the preparation and sale of foods (victuals).

The Governor of the free French in New Caledonia and dependencies, Office of Legion of Honor.

Having noted the decree of 12 December 1874 on the government of New Caledonia and dependencies.

Knowing the decree of 20 November 1911 carrying the application of the provisions of the law of 15 February 1902 relating to the protection of public health for New Caledonia and dependencies.

Having seen the regulations 764 of 7 October 1915 determining the measures of precaution to be taken for sale of foods preliminary cooking;

According to the proposition of the colonial council of Hygiene at its meeting on 9 May 1941;

The permanent executive committee of the council agreed on the following at its meeting on 3 June 1941.

#### RESOLUTION

The places of manufacture of foods,

bakeries, pastry shops, pork butcheries, restaurants will be regulated as follows:

The places of manufacture, handling and selling shall be spacious, abundantly aired, and enlightened by sun, and the floor will be covered with tile, brick or cement to allow washing.

(In cases of transition) Temporarily boards will be allowed in the old places. In no case will the floor be simple beaten earth. The roof shall always be in perfect condition.

These places do not necessarily have to have direct communications with dwellings and they will be removed at least ten meters from the closets.

The openings should be (supplied) covered and latticed with cloth.

The (implements) tools used in the manufacture should be kept in good condition and placed in state of propriety after every use.

The products used shall be shielded from all causes of pollution coming from markers, domestic animals, rodents or insects.

The water used in the manufacture should be furnished by canalization wherever potable water exists.

ART. 2—If the conditions of fitting out the shops and locations fixed by the preceding articles are not filled, the (exercising of the profession) permission to run the place will be withdrawn until the demandable improvements are made as per local order.

ART. 3—All the provisions destined to be eaten without preliminary cooking or washing on the part of the consumer should be kept from being soiled, especially by dust and flies by metal lattice work or cloth containers, exceptions being made in case of fruits that can be peeled or other foods that have an outside covering.

ART. 4—It is forbidden for the buyer to handle exposed foods that are to be eaten without preliminary cooking.

The foods to be eaten without cooking are comprised of bonbons, goodies, etc., and shall be served to the clients by the aid of palettes, wood or metal, with forks in hands.

The handlers shall during work wear a proper white blouse and cap.

This clothing shall not be worn except at work.

The food handlers can be forced to be examined themselves and to have a sputum examination at any time.

ART. 5—All the offenders of the preceding regulations will be punished by an imprisonment of 1 to 5 days and a fine of 1 to 15 Fr. or by one or the other of the two fines.

ART. 6—The regulation 764 of 7 October 1915 is rescinded.

ART. 7—The Secretary General, the Attor-

ney General, the Chief Judge, and the director of Public Health, are charged, each one according to his responsibility, for the execution of the present regulations.

Noumea, 3 June 1941.

SAUTOT

### Appendix 3

U. S. PUBLIC HEALTH DEPARTMENT  
OF NOUMEA  
NOUMEA, NEW CALEDONIA

31 August 1944

To: Operators of Civilian Eating Establishments desiring to Sell to U. S. or N. Z. Armed Forces.

1. All operators of establishments wishing to sell or serve meals, lunches, food, or drinks to members of the U. S. Armed Forces or New Zealand Forces are required to observe the following rules:

a. Maintain their establishments in strict accordance with all French Sanitary Laws.

b. Serve no raw vegetables to United States or New Zealand personnel.

c. Serve no raw milk to United States or New Zealand personnel.

d. Serve to United States or New Zealand personnel only such ice cream as meets the U. S. Armed Forces sanitary standards for manufacture and handling of same.

e. Serve only such meat to United States or New Zealand personnel as has been kept under adequate refrigeration.

f. Permit inspection of their establishments, by United States or New Zealand Inspectors, at frequent intervals to determine whether or not the above provisions are being complied with.

2. An "approved" sign will be loaned to those operators whose establishments meet or exceed the minimum sanitary standards listed above, and who wish to serve meals, lunches, food or drink to members of the U. S. or N. Z. Armed Forces. "Approved" signs will be loaned to operators with the understanding that:

a. Signs will be placed in a prominent place on the premises.

b. "Approved" signs will be denied those establishments from which the signs have been recalled twice.

c. Operators of establishments wanting "Approved" signs will communicate with U. S. Public Health Department of Noumea.

d. "Approved" signs will be removed at any time, should an inspection show that the establishment is failing to meet the minimum sanitary standards.

W. S. DOUGLAS, Colonel. MC.

Director

### Appendix 4

#### IMPROVEMENTS IN ONE RESTAURANT ACCOMPLISHED UNDER THE APPROVED RESTAURANT PROGRAM

As an example of what was accomplished we will select one of the restaurants which is now "Approved," and describe the conditions before instigating the approved program and the conditions as they are now. To be fair to the French, this restaurant was not typical of all restaurants, but was a good example of the more backward establishments. Some establishments had little to do other than screen the kitchen in order to comply with the recommendations for being approved.

On 23 Sept. 1944, a few weeks after the Poilu restaurant opened in the village of Païta, representatives of the Surgeon's Office made an official inspection and found conditions very unsatisfactory. At first it was felt that too many changes were needed in order to correct all the insanitary conditions noted, but the owner, M. Deplanque, asked us to make recommendations.

In the kitchen the following insanitary conditions were noted: hundreds of flies, many dirty empty food containers, a questionable dish, washing set-up, much exposed food. The entire room needed thorough cleaning and repairs.

In the dining room the floors were fairly clean but needed extensive repair work; the walls needed redecorating, and the tables needed a thorough renovation.

The back yard presented the most offensive conditions. The cement drainage ditches were clogged with decaying food, poultry were feeding on the back step, a small pig pen near the back door was breeding flies by the hundreds, the latrine was nothing more than a canvas screened-in area with a tin pail under an uncovered seat. The entire back of the seat was entirely open and allowed free ingress of poultry, rodents, and flies.

To increase further the possible health hazards of this restaurant, water was being served from a questionable source, and not all food handlers had food handlers' certificates.

The following general recommendations were made:

1. The complete screening of the kitchen, and furnishing the doors with automatic closing devices.

2. Thorough cleaning of the kitchen followed by painting and repairing of floors and walls.

3. The furnishing of adequate dish washing facilities. (See description of approved method.)



4. The furnishing of adequately screened-in food storage space.

5. The furnishing of adequate cold storage.

6. The renovation of the dining room by repairing floors, tables, and redecorating the walls.

7. The removal of the pig pen.

8. The construction of a new fly and rodent proof latrine.

9. The cleaning of all drainage ditches.

10. The elimination of poultry from the vicinity of the kitchen.

11. A thorough cleaning of the back yard.

12. The furnishing of chemically treated water for drinking and kitchen purposes.

13. The obtaining of food handlers' certificates for all personnel.

To comply with these recommendations in-

involved considerable labor and money. However, the owner, a former French soldier, seemed to be cognizant of the need for all these improvements and started to make them. During the following weeks, several reinspections were made of this establishment by armed forces inspectors who found the work progressing favorably. By 23 Dec. 1944, M. Deplanque had carried out all recommendations. He then had a clean, screened, adequately equipped, acceptable kitchen. The dining room was clean and redecorated. A new fly and rodent proof latrine was finished, the pigs were removed from the back yard, and the entire yard area was thoroughly cleaned. Every food handler had cards and actually showed signs of being proud to be a part of this reborn establishment.

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# Survey of the Blood Plasma Levels of Vitamin A, Carotene, Ascorbic Acid, and Tocopherols of Persons in an Area of Endemic Malnutrition

P. L. HARRIS, PH.D., K. C. D. HICKMAN, PH.D., J. L. JENSEN, PH.D., AND T. D. SPIES, M.D.

*Research Laboratories, Distillation Products, Inc.; and Department of Internal Medicine, University of Cincinnati, Cincinnati, Ohio*

THE problem of diagnosing sub-clinical vitamin deficiencies remains one of the most important on the agenda of the medical and nutritional scientist today. Early recognition and treatment of such deficiencies would be of untold value, especially in areas where nutritional lacks are endemic. If laboratory methods could be developed for the recognition of the deep-seated changes which are believed to occur during the beginning stages of deficiency diseases, most of the patients suffering from them would be spared years of ill health.

It was with this in mind that the research group in Rochester, N. Y., for the past five years conducted experiments to determine the concentration of certain vitamins in human blood plasma. The substances under most intensive study were vitamins A and E, but it soon became apparent that the concentration of carotene and vitamin C might follow the trends of the other two. Methods of measuring the four vitamins in a single sample of plasma

were perfected sufficiently for daily use and a survey was started on normal subjects in the Rochester area. Search was also made for a group of admittedly deficient subjects so that a comparison could be made between plasma contents of persons in fair and poor health.

Independently and for a long time previously, the University of Cincinnati has sponsored studies in nutrition at the Hillman Hospital, Birmingham, Ala., in an area where pellagra and beriberi have been endemic. These studies yielded valuable information concerning the diagnosis and treatment of specific nutritive failure.<sup>1</sup> Repeated analyses of dietaries, however, confirmed the consistent clinical impression that mixed deficiency states were of most common occurrence. Individuals sustained by dietaries deficient in many essential nutrients might show specific signs of deficiency of one or two or even three such nutrients. They might show the classical syndrome of pellagra, beriberi, or scurvy. Many such persons, however, showed no specific symptom or sign, but still were distinctly ill. Clinicians spoke of a "preclinical" deficiency state; a "biochemical" lesion. Little has been said or could be said about those individuals with more

Communication No. 69 from the Laboratories of Distillation Products, Inc.

University of Cincinnati Studies in Nutrition at the Hillman Hospital, Birmingham, Ala. These studies were aided by a grant from the Ingalls Foundation

generalized nutritive failure or of those whose illness was manifest by atypical signs.

The two groups of investigators, at Rochester and at Cincinnati, accordingly collaborated in an attempt to determine the vitamin status of admittedly deficient persons. In late 1943 a study was initiated and directed particularly toward determining the blood concentrations of ascorbic acid, vitamin A, carotene, and tocopherols in a group of patients of the clinic who seemed to eat an improper diet and had general and vague symptoms, but no diagnostic lesions uniformly recognized by physicians.

Of the patients who attended the Hillman Hospital Nutrition Clinic between March 15 and September 13, 1944, 350 were arbitrarily selected for the survey. Detailed records were available as to their symptoms, complaints, and diets for a considerable time prior to this study. Eight per cent of them were colored and most of the entire number were in a comparatively low income group.

Most of the "patients" presented the vague symptoms so often associated with B-complex deficiencies<sup>2</sup>: itching and burning of the eyes, photophobia, redness and thickening of the conjunctiva, burning of the tongue, nausea, diarrhea, headaches, insomnia, nervousness, tenderness of the muscles, numbness of the extremities, and loss of weight, sleep, and appetite. A few of these patients under observation have, and have had in the past, actual lesions of pellagra and riboflavin deficiency. The patients having these lesions were treated with synthetic niacin or riboflavin. After the lesions began to heal, the vitamins were discontinued but the patients still remained on their deficient diets. It should be emphasized, however, that none of the patients had acute lesions or were under treatment at the time the initial blood samples

were taken. In fact, the only lesions which might be said to be apparent at all were a few residual changes around the corners of the mouth and on the tongue and skin. There were 22 such persons in this group who had had, at some previous time, mild lesions but, since their symptomatology was in every way similar to the other persons in the "patient" group, they were arbitrarily included.

It was the laboratory practice to use the blood of a normal person along with each batch of determinations. There were 70 persons in this group of so-called "normals." Included were physicians, nurses, laboratory workers, and various professional men and women in Birmingham, all essentially healthy as indicated by negative clinical findings. The individuals tested, both "patients" and "normals," ranged in age from 6 to 80 years. Males constituted 40 per cent of the patients and about 60 per cent of the "normal" group.

The investigational procedure began with a clinical examination followed by a thorough questioning as to dietary habits and past medical and nutritional history. Dietary records were made by Jean Grant, nutritionist of the Clinic. Thirty ml. of venous blood were withdrawn and the blood plasma subjected to vitamin analyses.\* Red cell counts and hemoglobin determinations were also made routinely. Differential counts were made whenever it seemed of interest.

The plasma of the venous blood samples was analyzed for vitamin A, carotene, ascorbic acid, and tocopherols. Vitamin A and carotene were determined by the method of Kimble<sup>3</sup> and ascorbic acid by the method of Mindlin and Butler,<sup>4</sup> using Bessey's<sup>5</sup> correction

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\* Hugh Risley and William Swanson performed the vitamin analyses.

for turbidity, while the tocopherols were determined by a method of Quaife and Harris.<sup>6</sup>

No attempts were made to obtain fasting blood levels of vitamin A since Kimble<sup>3</sup> found that ordinary meals do not cause a measurable increase in either vitamin A or carotene within 2 to 6 hours. The vitamin A levels are reported as micrograms, since pure vitamin A was used as a standard in constructing the calibration curve. The factor 3.50 may be used to convert micrograms of vitamin A to biological "units," assuming a value of 2,000 for converting E 1%, 1 cm.; 328 m $\mu$  to "units." As a matter of interest, if we wished to convert micrograms of vitamin A to the type units used by Kimble,<sup>3</sup> we would multiply by the factor 2.54; to convert to the type units used by May<sup>7</sup> and by Youmans,<sup>8</sup> we would multiply by 0.39 and 3.33, respectively.

In order to minimize the effect of recent ascorbic acid intake on the blood level of this vitamin, a check was made to be sure that the patients had not eaten foods containing large amounts of ascorbic acid at the meal preceding the taking of the blood sample.

OBSERVATIONS AND DISCUSSION

The state of nutrition of the patients with respect to the vitamins tested for was found to be much inferior to that of the "normals" (see Table 1). The average vitamin A level of the patients was 72 per cent of that of the "normals," the carotene 70 per cent, the vitamin C 51 per cent and the vitamin E 75 per cent. Statistical calcula-

tions confirmed the fact that these differences were highly significant. However, in accordance with many unpublished clinical observations, it was found that persons on a very deficient diet may have high plasma levels of vitamins A, C, and E. This is an unexplained occurrence.

*Vitamin A*—Of our "patient" group, only 8 out of 350 were thought by any observers at all to show evidences of vitamin A deficiency, such as hyperkeratosis, thickening of the conjunctiva, etc., upon clinical examination. Five of these patients were colored.

Youman's, Patton and associates,<sup>9</sup> in the portion of their report dealing with the vitamin A status of a large population, criticised each diagnostic criterion which they used (diet histories, dark adaptation measurements, clinical examination, and blood vitamin A level), but concluded in general that greatest reliance can be placed on the concentration of vitamin A in the blood. They state that a concentration below the generally established normal value may be taken as evidence of a deficiency. In this connection it is interesting to note that 90.8 per cent of our patient group had blood vitamin A values below the mean value of our "normal" group. Yarbrough and Dann<sup>10</sup> also considered the level of vitamin A in blood as the most promising method of detecting mild vitamin A deficiency by means of a single test. In Table 2 the values are grouped quite arbitrarily according to so-called "deficient," "normal," and "well nourished" classifications. This bears out the fact that the "normals" are superior in

TABLE 1  
*Blood Plasma Vitamin Levels*

Group	Vitamin A ( $\mu\text{g. \%}$ )			Carotene ( $\mu\text{g. \%}$ )		Ascorbic Acid (mg. %)		Tocopherols (mg. %)	
	Mean $\pm$			Mean $\pm$		Mean $\pm$		Mean $\pm$	
	No.	S.D.	Range	S.D.	Range	S.D.	Range	S.D.	Range
"Patients"	350	44 $\pm$ 15	(14-94)	146 $\pm$ 57	(10-571)	.45 $\pm$ .58	(0-1.91)	.78 $\pm$ .26	(.05-1.66)
"Normals"	70	61 $\pm$ 13	(36-89)	210 $\pm$ 31	(89-376)	.88 $\pm$ .42	(0-1.73)	1.04 $\pm$ .32	(.39-2.02)

TABLE 2

*Distribution of Subjects According to Blood Vitamin A Levels*

	Deficient *	Normal *	Well Nourished *
"Patients" (% of total)	76	20	4
"Normals" (% of total)	32	47	21

\* Deficient individuals had blood values below 51 micrograms %

Normal individuals had blood values between 51 and 71 micrograms %

Well nourished individuals had blood values above 71 micrograms %

vitamin A status to the "deficients."

*Carotene*—Few studies have been made regarding the variation of plasma carotene or its significance. Clausen and McCoord,<sup>11</sup> however, determined the plasma carotenoid level of a small group of supposedly normal persons over a period of one year and noticed a very definite seasonal trend depending on the intake of seasonal carotene-containing foods. From a minimal value of 154  $\mu\text{g.}\%$  in May, the average rose smoothly to a maximum of over 280  $\mu\text{g.}\%$  in September and then returned gradually to a minimum the following May. This is consistent with unpublished observations of Grant and Spies. Consequently, it is only when carotene levels of the test group can be compared simultaneously with those of a control group that plasma carotene measurements are significant. The evidence from our study indicated that the carotene status of individuals in the patient group was inferior to that of those in the "normal" group. Table 3, in which the subjects of both groups are arranged in an arbitrary classification, illustrates this fact quite clearly. This may have been due directly to a lower intake of food-carotene or indirectly to a poorer utilization.<sup>12</sup>

*Vitamin C*—In interpreting the significance of plasma concentrations of vitamin C, we are cognizant of the findings of Crandon, *et al.*<sup>13</sup> that low, and even zero, values may not be

TABLE 3

*Distribution of Subjects According to Blood Carotene Levels*

	Deficient *	Normal *	Well Nourished *
"Patients" (% of total)	73	17	10
"Normals" (% of total)	27	45	28

\* Deficient individuals had blood values below 175 micrograms %

Normal individuals had blood values between 175 and 250 micrograms %

Well nourished individuals had blood values above 250 micrograms %

critically dangerous unless maintained at such levels for several months. Nevertheless, we are in agreement with Keuther, Telford, and Roe<sup>14</sup> in believing that important information with respect to vitamin C can be obtained by determining the concentration of ascorbic acid in the blood. As suspected, the concentration of ascorbic acid in the blood plasma of the patient group was significantly lower than that of the normals.

Youmans<sup>8</sup> contends that plasma ascorbic acid values below 0.4 mg.% represent a definite state of deficiency in which physical signs of scurvy may appear. This may be interpreted to mean that the reserve supply of ascorbic acid is lowered to the danger point. Levels from 0.4 to 0.7 mg.% are borderline, still indicating hypovitaminosis. Values of ascorbic acid generally accepted as normal range above

TABLE 4

*Distribution of Ascorbic Acid Blood Plasma (Classification according to Youmans<sup>8</sup>)*

	Deficient *	Border-line *	Normal *	Well Nourished *
	%	%	%	%
"Patients"	61	16	16	7
"Normals"	13	23	40	24

\* Deficient individuals had plasma values below 0.5 mg %

Borderline individuals had plasma values from 0.4 to 0.7 mg.%

Normal individuals had plasma values from 0.7 to 1.2 mg.%

Well nourished individuals had plasma values above 1.2 mg.%

0.7 mg.%, with those as high as 1.2 mg.% common in many well nourished patients. Individuals tested in the present study were classified in these groups as shown in Table 4. Only a negligible percentage of Birmingham patients can be considered well nourished, while a large percentage of them were in the subnormal classifications. The majority of the "normals" were concentrated in the two intermediate groups, although almost one-quarter had values above 1.2 mg.% of ascorbic acid which placed them in the "well nourished" classification.

**Vitamin E**—If an individual's blood level of tocopherol can be considered a measure of his status with respect to vitamin E, then the difference between the plasma levels of tocopherols for patients and "normals" can be considered of importance. It is our working hypothesis that in studies of this nature carried on over a period of several months, blood levels of the fat-soluble vitamins might reflect tissue stores of these factors. Consequently, if the storage of vitamin E in the muscle and liver is low as a result of subnormal intake or of inefficient utilization, then the blood levels eventually may also be low.

The average level of tocopherols in the blood plasma for the "normal" group in this study was 1.04 mg.%. Wechsler, *et al.*<sup>15</sup> reported that 12 "normal" individuals under his observation had an average value of 0.95 mg.%. Similar results were obtained by Minot and Frank<sup>16</sup> who found that the concentration of tocopherols in the blood of their 4 normal control children averaged 0.88 mg.%. Quaife and Harris<sup>6</sup> found an average value of 1.2 mg.% in a group of 13 supposedly normal individuals. Accordingly, assuming that the range of values between 0.88 and 1.2 mg.% represents normal, values below 0.88 mg.% are subnormal and above 1.2 mg.% are well nourished

with respect to vitamin E, we can tabulate our results as shown in Table 5.

TABLE 5

*Distribution of Tocopherol Blood Plasma Levels*

	Deficient *	Normal *	Well Nourished *
Birmingham "Patients" (% of total)	67.3	26.2	6.5
Birmingham "Normals" (% of total)	31.4	40.0	28.6

\* Deficient individuals had blood values below 0.88 mg.%

Normal individuals had blood values between 0.88 and 1.20 mg.%

Well nourished individuals had blood values above 1.20 mg.%

Obviously the "patient" group is inferior to the "normal" group in vitamin E nutriture.

#### SUMMARY AND CONCLUSIONS

A survey has been made of the distribution of vitamin A, carotene, ascorbic acid, and tocopherol concentrations in the blood of two groups of selected persons from the same locality—a group of 350 "patients" in the Nutrition Clinic and a group of 70 "normal" persons working in the same area. The "normal" persons had no symptoms, whereas the "clinic" patients all had symptoms but no diagnostic lesions.

The mean vitamin A, carotene, ascorbic acid, and tocopherol levels in the plasma of the patient group were significantly lower (72, 70, 51, and 75 per cent respectively) than those of the normals. These findings suggest that it would be worth while to administer vitamins A, C, and E, separately and under controlled conditions to determine the effect on the blood levels and whether or not there is an improvement in any of the symptoms. Such a test is now under way.

#### REFERENCES

1. Spies, T. D., Hientower, D. F., and Hubbard, L. H. Some Recent Advances in Vitamin Therapy. *J. Am. Chem. Soc.*, 115:292, 1940.
2. Spies, Tom D., Vilter, R. W., and Douglas, Gilbert, Jr. Nutrition in Convalescence and Rehabilitation. *South M. J.*, 37:560, 1944.

3. Kimble, M. S., Jr. The Photocolorimetric Determination of Vitamin A and Carotene in Human Plasma. *Lob. & Clin. Med.*, 24:105, 1939.

4. Mindlin, R. L., and Butler, A. M. The Determination of Ascorbic Acid in Plasma; A Macro-method and Micromethod. *J. Biol. Chem.*, 122:673, 1938.

5. Bessey, Otto A. A Method for the Determination of Small Quantities of Ascorbic Acid and Dehydroascorbic Acid in Turbid and Colored Solutions in the Presence of Other Reducing Substances. *J. Biol. Chem.*, 126:771, 1938.

6. Quaife, Mary Louise, and Harris, Philip L. The Chemical Estimation of Tocopherols in Blood Plasma. *J. Biol. Chem.*, 156:499, 1944.

7. May, Charles D., Blackfan, Kenneth D., McCreary, John F., and Allen, Fred H. Clinical Studies of Vitamin A in Infants and in Children. *Am. J. Dis. Child.*, 59:1167, 1940.

8. Youmans, J. B. *Nutritional Deficiencies*. Philadelphia: Lippincott (2nd ed.), 1943.

9. Youmans, J. B., Patton, E. W., Sutton, W. R., Kern, R., and Steinkamp, R. Surveys of the Nutrition of Populations III. *A.J.P.H.*, 34:368, 1944.

10. Yarbrough, M. E., and Dann, W. J. Dark Adaptometer and Blood Vitamin A Measurements in

a North Carolina Nutrition Survey. *J. Nutrition*, 22:597, 1941.

11. Clausen, S. W., and McCoord, A. Personal communication and Report of the American Chemical Society Meeting in Pittsburgh, 1943.

12. Guggenheim, K. The Biological Value of Carotene from Various Sources and the Effect of Vitamin E on the Utilization of Carotene and of Vitamin A. *Biochem. J.*, 38:260, 1944.

13. Crandon, John H., Lund, Chas. C., and Dill, David B. Experimental Human Scurvy. *New England J. Med.*, 223:353, 1940.

14. Kuether, C. A., Telford, I. R., and Roe, J. H. The Relation of Blood Level of Ascorbic Acid to the Tissue Concentrations of this Vitamin and to the Histology of the Incisor Teeth in the Guinea Pig. *J. Nutrition*, 28:347, 1944.

15. Wechsler, Israel S., Mayer, Gerda Gernsheim, and Sobotka, Harry. Tocopherol Level in Serum of Normals and Patients with Amyotrophic Lateral Sclerosis. *Proc. Soc. Exper. Biol. & Med.*, 47:152, 1941.

16. Minot, A. S., and Frank, Helen E. Serum Tocopherol—Its Relation to Failure of Vitamin E Therapy for Pseudohypertrophic Muscular Dystrophy. *Am. J. Dis. Child.*, 67:371, 1944.

## N. Y. Academy of Medicine Reviews President Truman's Health Message

The New York Academy of Medicine, on January 3, inaugurated George Baehr, M.D., who is Director of Clinical Research at Mt. Sinai Hospital, New York, and member of the New York State Public Health Council, as President. In his inaugural address Dr. Baehr presented a statement formulated by the Academy's Committee on Medicine and the Changing Order which is making a three year study, of which the final report will be published in 1946.

The Academy endorsed that part of the President's message relating to the construction of hospitals and related medical facilities, the expansion of public health and maternal and child health services, the advancement of support by the federal government of medical education and research, and the protection of workers against loss of wages resulting from sickness and disability. It did not approve an overall national compulsory scheme of medical

care. Instead it offered eight recommendations as follows:

1. That voluntary, non-profit insurance receive a thorough trial as a means of providing medical services for low-income families.

2. That in certain instances, and particularly when private resources are inadequate, government support be provided.

3. That careful experiments be conducted "at state and local levels with compulsory Government insurance, so that we may have in the near future comparative experience with the relative values of voluntary and compulsory procedure."

4. That better opportunities for continued medical education, whether graduate or post-graduate, be provided in order that requirements of newer medical services may be met.

5. That there be a gradual extension of group practice in close coöperation with high-grade hospitals.

6. That special emphasis be placed on preventive medicine in all forms of practice.

7. That basic public health services be provided for those communities that now lack them.

8. That provision be made for the education of the public in order that it may better know how to obtain treatment and coöperate in the prevention of disease.

# Permanent Program for Typhus Fever Control in Memphis, Tennessee

JOEL C. BEALL

*Public Health Engineer, Memphis and Shelby County Health Department*

THE establishment of the rat control program in Memphis was due, not to the existing prevalence of rat-borne diseases, but to the realization that murine typhus is apparently spreading inland from the South Atlantic and Gulf Coast states. The program is therefore one of typhus prevention rather than control. Months of preparation, including education and administrative planning, were necessary before actual work could begin. Efforts were accelerated by the occurrence during August and September, 1943, of 6 cases of typhus (this was the total for the year) among employees in a local feed mill. It is a permanent program in the sense that permanent methods and materials are used and it has been established as a permanent activity of the Health Department.

The purpose of this paper is to present a description of events involved in the establishment of the program, and to tell of its operative methods and policies. Rat proofing, vent stoppage or rat stoppage, and rat eradication measures have been ably discussed in numerous papers and will not be dealt with in detail here except as they may relate especially to the successful prosecution of the program's objective.

## ESTABLISHMENT OF PROGRAM

In November, 1943, the Typhus Control Unit of the U. S. Public Health Service assigned to the Health Department two of its field men, who remained

until the following June, lending assistance in establishing the program. Also in November, 1943, the City Commission adopted an ordinance requiring in part that:

1. All existing business buildings shall be rat proofed.
2. New construction of business buildings shall include rat proofing.
3. All business buildings shall be freed of rats and maintained in a rat proof and rat free condition.
4. Responsibility for rat proofing rests with owners and that occupants of business buildings are liable for rat eradication.

The ordinance further deals with rat harborage, storage of food and garbage, and places responsibility for enforcement on the Health Officer.

Realizing that enforcement of the ordinance involved the existence of an organization capable of carrying out rat control measures on a large scale, and believing that this was not available among the local pest control and construction firms, the Health Department established a permanent Typhus Control Service within its Division of Sanitation.

Since it was planned that the program, except for administration and inspection service, should be self-supporting without profit, the problem of financing resolved into one of providing a fund with which work could be started. The County Commission provided funds for this purpose and, although the amount was not limited, around \$8,000 was expended for stocks



of materials and equipment. This, in general, constitutes a revolving fund in that money collected for work performed is immediately converted into replacement supplies necessary for current and future operations.

Business blocks in the downtown shopping district were selected for the beginning of control work. This district was chosen for the dual purpose of giving protection against typhus fever to the greatest number of persons in the shortest period of time, and because of the greater publicity benefits which could be had by offering a demonstration of the work in the area most frequented by the city's population.

#### OPERATION OF PROGRAM

Field operations on a block by block basis began February 1, 1944, with one foreman and two common laborers forming a nucleus for field personnel. The program has as its present objective the elimination of rat life within business buildings. To attain this there are currently practised several interdependent phases:

##### 1. *Surveys:*

Field surveys are designed to gather information which primarily is used to prepare estimates of rat control costs for presentation to building owners and occupants. For rat proofing, special field forms are provided on which items requiring attention are recorded, such as doors, ventilators, roofs, interior work, basements, etc. For each individual item the man hours and cost of materials necessary are estimated and recorded in the field. The estimator must know unit costs and must be capable of making rapid mental calculations. No recording is made of types or quantities of materials since they are furnished from a common stock available to all buildings where work is to be done.

Eradication cost estimates are based

on the assumption that it will require a maximum of 3 months for the elimination of rats within the average building. Attention must be given to the degree or quantity of rat infestation, size of the building, harborage, etc., in order to decide or estimate the portion of the trapper's work day which will probably be spent in the building for this period of 3 months. Knowing the trapper's wage rate, the estimator can readily compute the estimated cost of labor involved, to which is added a small figure for contingencies such as removal of rubbish and similar harborage and for poison bait. Although an empirical formula, this has shown very accurate results thus far. Experience of personnel assigned to making estimates is the prime factor in securing accuracy.

Estimates are purposely made high in order that the work may be performed for an actual cost slightly less than the estimate, thereby fostering the good will of the individuals who are paying the bill, and further giving a safety factor in favor of the Health Department.

##### 2. *Presentation of Work Agreements:*

Following the survey and immediately preceding actual control work, building owners and occupants are personally contacted and presented with an official letter of notification of the rat control requirements and a work agreement on which is stated the estimated costs thereof. The letter, pursuant to the ordinance, advises that the building is not rat proof and contains an infestation of rats, and orders the inauguration or completion of work within a certain time. Should an individual choose to disregard the order, this procedure permits the Health Department legally to perform the work without consent of the owner or occupant, and this in turn gives protection to the other adjacent buildings which might

be adversely affected by the omission of control measures on the one structure. This has provided for a definite continuity of operations, the lack of which would have caused disruption of plans and progress.

In presenting the work agreement, the owner or occupant is given the option of performing the work himself, to contract with a private firm, or to contract with the Health Department. Should the latter option be accepted his signature is secured on the work agreement which by virtue of good faith obligates the Health Department to perform the necessary work for a charge not greater than the estimated cost. If the former options are chosen the owner or occupant is given written minimum specifications for rat proofing and is advised that in-progress and final inspections will be made to determine compliance with requirements for both rat proofing and eradication.

### 3. Rat Proofing:

In this phase all the accepted principles, as based on the habits of rats, are employed. In general vent stoppage, the protection of exterior building surfaces is practised as originated by the Georgia Department of Public Health, with relatively little interior work being done. However, there are many situations, brought about by the condition of a building or the nature of the business carried on therein, which require complete rat proofing of interior surfaces and fixtures as well as exterior. Experience has indicated that a combination of inside and outside work, with emphasis placed on outside rat proofing, is the best economical general plan to follow.

Interior rat proofing is a second defense line, in that it discourages a reinfestation of rats which may enter a building accidentally such as in merchandise shipments or through open doors, and it facilitates eradication by

eliminating harborage thereby making rats more vulnerable to eradication measures.

Special emphasis is placed on permanency of rat proofing with consideration logically being given to economy. Repairs or adjustments are made to any item on a building prior to installation of rat proofing sufficient to insure that the life of the item will then correspond to the life of the rat proofing. Sound construction methods are used which with good workmanship produce permanency and neatness.

The electric power and communications utilities are coöperating in the rat proofing work by sealing all underground cable conduits, thereby preventing the travel of rats underground from one block or section to another or from manholes into buildings, and they are accelerating their program of above-ground wire and cable removal, which eliminates many exterior rat approaches to buildings.

### 4. Removal or Clean-up of Harborage:

During and before the application of rat proofing, harborage inside buildings as is caused by improper storage of goods and discarded materials is removed from the premises or restacked in such a manner, elevated from the floor and away from the walls, that it will no longer afford rats hiding and nesting places. Results thus far indicate that this procedure is a major factor in reducing the load on the eradication crews and in minimizing the cost in many cases.

Removal and clean-up of harborage involves labor for the most part with materials being used in cases where it is desirable to construct elevated racks for usable merchandise storage. The expenses in this connection are properly chargeable to eradication rather than to rat proofing.

Coöperation with the Fire Department has in many specific cases proved

its value to this phase. In enforcing that part of the typhus control ordinance which prohibits the accumulation of rat harborage such as rubbish, this department through its organized fire prevention inspection service has assisted greatly.

#### 5. *Rat Eradication:*

This phase requires a maximum of knowledge, ingenuity and perseverance. Measures currently employed are trapping, poisoning, and gassing.

Trapping with steel traps and wooden snap traps has produced the majority of rats obtained. Conventional procedures are used which involve setting traps in known rat runs. The longer trapping is continued the more difficult apparently it becomes to catch rats. This is probably due to the reduction in numbers, to a change in the location of their runs, and to their avoidance of traps, which demonstrates an increasing suspicion or wariness. To increase the efficiency of trapping, ordinary baking flour in which rat foot prints are readily visible is used by trappers to determine the recent presence of rats. The flour is carried by the trapper in a small cloth sack and is spread smoothly with a trowel along known or suspected rat runs. Its use as the final step in determining whether or not a building is rat free is highly important. Six instances have already been noted of buildings where the catch of rats in traps dropped to zero remaining there for as long as 7 weeks. In one of the cases even a thorough visual inspection by several trained persons (without the use of flour) failed to disclose the definite and positive recent presence of rats, while in the others it was observed only with effort. Flour was then placed in the buildings at various points but particularly around the traps. Inspections the following day revealed the presence of rat tracks in all the buildings, and where tracks were seen around

the traps they demonstrated that rats had approached the trap to within a few inches and had then withdrawn or had gone around it. This demonstrates the value of flour and clearly indicates that a fallacy exists in assuming a building to be free of rats on the strength of a zero catch with the use of traps even over a rather long period of time.

Each trapper is assigned a route which he covers daily. It has been found that an increase in the catch of rats will result in most cases if trappers are changed from one route to another occasionally and if all traps are sprung, or completely removed and replaced from time to time. The changing of trappers has the further advantage of providing men who are acquainted with routes other than their own, hence should a trapper be absent from duty the covering of his route will be made more effective and convenient.

Poisoning with the commonly used poisons and baits has been for the most part employed as a pre-rat proofing step designed to reduce the trapping burden; it is also used in combination with other eradication measures.

Gassing with hydrocyanic acid gas thus far has been confined entirely to burrows, partition walls, hollow ceilings, and to piles of rubbish or merchandise which afford rats harborage inside buildings, and some outside work has been done to reduce the chances of a reinfestation. It has been found especially valuable in conjunction with the clean-up of harborage, and will rapidly reduce a heavy rat population which might require lengthy application of other control measures to obtain the same effect. Gas is also used in buildings where the infestation has been reduced through various means but where the few rats which remain are wary of traps and bait. In this connection work at night in the kitchens of restaurants has produced results in many cases sufficient to justify the

trouble and extra work involved. Fumigation of entire buildings has not yet been attempted.

Rats obtained are tagged showing name and address of place where caught, whether dead or alive, in which type trap, or whether gassed or poisoned, on which floor of the building, and species and sex. The securing of ectoparasites and blood samples for laboratory examination has been temporarily discontinued due to the unavailability of personnel, but is considered important to the complete picture. Weekly postings showing rats caught are made on individual record sheets for each business establishment. This assists greatly in work planning.

Of the 2,349 rats caught from February 1 to October 14, 1944, 68 per cent were *norvegicus* and 32 per cent were of the *rattus* group which includes *R. r. alexandrinus*, *rattus* and *frugivorus*. Only two true *R. r. rattus* have been observed. It is interesting to note that comparable figures were obtained from a three-story restaurant where during a 9 week period 406 rats were caught, 70 per cent being norways and 30 per cent the *rattus* group.

#### 6. Maintenance:

To date eradication measures have been completed in eleven of fourteen blocks which have been made rat proof. This constitutes sufficient work to justify and require maintenance. The City of Memphis ordinance directs that inspections shall be made of all rat proofed buildings at intervals of not more than 45 days, and that occupants shall maintain the buildings in a rat proof and rat free condition. To carry this out, one foreman has been assigned to inspection work. His duties are to note and record any evidence of rat infestation and any new openings which will permit rats to enter a building, serving the occupant with a notice to abate the conditions found. This neces-

sitates reinspections to determine compliance, and offers excellent educational opportunities.

Cases encountered which required repairs to rat proofing indicate the preference on the part of occupants is that the Health Department perform the necessary work. Since the quantity of work required in the entire area has been and probably will be negligible, the Health Department has adopted the policy of catering to this preference, submitting statements of repair costs to occupants.

However, in the case of a reinfestation a different problem is presented. This has occurred to a slight degree in several of the business buildings formerly freed of rats. It may have been caused by leaks in the rat proofing, by a few rats being unknowingly left in the building when original eradication measures were terminated, by migration of rats from an adjacent building where eradication was performed by a private firm, or by the occupant whose efforts and results are not as conscientious and effective as those of the Health Department, or by the accidental reentry of rats. Regardless of cause, this reinfestation presents a difficult and pressing problem.

Present policies are to insist that the occupant abate this condition himself or through a private contract unless, of course, it is found that the condition was the fault of the Health Department. Reasons for this are that so many cases of reinfestation to a slight degree will probably be encountered in the future that it will be impossible for the Health Department to supply the necessary personnel for this work, and further it is felt that this attitude will in time make the individual more conscious of his responsibility in the program sooner than could be otherwise accomplished.

Night inspections are made at intervals since they disclose weak points in the rat proofing which would likely not

be discovered otherwise especially as applied to doors and windows which often remain open or are blocked by display goods in the daytime. To facilitate prompt knowledge of situations where a change of occupants or remodeling occurs in buildings, thereby insuring maintenance, the municipal licensing and building bureaus advise the Health Department of permits granted in this connection.

#### 7. *Finances:*

This function includes the keeping of records, computation of charges and the collection of money due for services rendered. For rat proofing, individual record sheets for each establishment or building are posted daily by the foremen showing actual quantities of materials and man hours used. For eradication, since the charge is based for the most part on time involved, the dates of the beginning and ending of eradication measures are recorded as they occur. These actual field records are sent to the office for examination after which they are no longer the responsibility of the Typhus Control Service.

The Health Department has its own purchasing and bookkeeping division, one of the duties of which is to compute charges for rat control services and to make collections. Hence, all field records together with the original estimate and the work agreement are forwarded to this division whose books are audited annually. Rat proofing charges are based on actual costs of materials and man hours, plus 20 per cent which covers depreciation of tools and equipment, transportation, and other overhead. To date, in 98 per cent of the cases the charge computed in this manner has not exceeded the contract estimate, and has at the same time covered costs. Methods of calculation of eradication charges are not so accurate theoretically but results demon-

strate they are sufficient. As the 3 month (90 day) period is used as a basis, the actual number of days during which eradication was in progress is divided by 90 and multiplied by the contract price or estimate to obtain the charge.

All statements and invoices are submitted monthly to building owners and occupants by mail. If the amount due is not paid after the third statement, the case is referred to the legal department of the city. Thus far only two have been handled in this manner, the result being receipt of payment following one letter by the City Attorney.

One of the most necessary and convenient financial arrangements currently in use is a petty cash fund from which small emergency purchases are made. It is available for use by all field foremen and has many times prevented delays.

Through November 1, 1944, approximately \$18,900 appeared on the books as the total of charges to property owners and occupants for rat proofing and eradication work done. Of this, 79 per cent has been collected. The remaining 21 per cent represents accounts receivable but not overdue.

The average cost of rat proofing to property owners to date has been \$86.54 and the unit cost per business establishment has been \$47.76. These figures are based on 299 establishments owned by 165 individuals. To install \$1 of rat proofing materials, \$2.10 in labor (3.2 man hours) has been required. The average cost of eradication to 147 building occupants has been \$31.51.

#### PERSONNEL AND EQUIPMENT

Comprising present personnel under the direction of a public health engineer are three field foremen whose duties are to supervise the work crews in rat proofing and eradication. Of these, one acts as general foreman who in addition

to his other duties posts field records and makes original surveys and estimates. Also assigned to the program is a sanitarian who presents the work agreements to property owners and building occupants, and further assists in maintenance inspections and educational work. Twenty-two colored common laborers are currently employed, 12 being assigned to rat proofing, 8 to eradication and 2 to special work which includes maintenance. Stenographic and filing services are provided by the Health Department office.

Equipment is composed of one automobile for contact work, one  $\frac{1}{2}$  ton open pickup truck for errands and light hauling, one  $1\frac{1}{2}$  ton dump truck for heavy hauling and two  $1\frac{1}{2}$  ton stake trucks covered with waterproof tops and completely equipped with sheet metal bending brakes, tools and materials usually sufficient for a day's operations. All tools are furnished the workmen by the Health Department.

A storage yard of  $\frac{3}{4}$  acre area located convenient to the business district is provided with a materials' storehouse and workroom, a field office, and parking space for the trucks.

#### GENERAL ASPECTS

Educational measures, public and personal, are and will be continuous. As a medium of presenting progress reports, pictures, special humorous and serious stories about the program, facts and other material, the local newspapers are very coöperative and are frequently used. Consideration is being given to obtaining "spot" announcements on the radio. The Chamber of Commerce and Civic Clubs also serve as effective mediums for education. To provide an official meaning for educational measures, especially with reference to building occupants who compose the group most concerned presently, the Health Department has prepared leaflets giving the essentials of rat con-

trol, sketches showing proper merchandise storage methods, and letters which are mailed to occupants upon completion of rat control work advising them in a friendly yet official way of their responsibilities for maintenance. Personal contact work is constantly in progress during daily routine field operations.

Official agencies, such as the U. S. Food and Drug Administration, the municipal Fire, Garbage, Building, and Police Departments, and the Memphis Light, Gas and Water Division which is municipally owned, are coöperative and helpful in every respect. Through their daily routine inspections of premises they are able to secure information of value to the program and are in a position to carry out extensive rat control education.

It is recognized that a rat problem also exists in the residential section of the city, and that for a control program to be complete it should be city-wide in its coverage. At the present time only advice to the householder can be offered, which is generally not satisfactory and produces little of permanent value. Plans for handling this include, when conditions will permit, attention to refuse storage and removal, harborage elimination, regular inspection services, and rat proofing in all sections of the city. Another problem is presented by future building construction, the solution of which will be the inclusion in the municipal building regulations of a rat proofing code which is presently being prepared.

A rat control program is one which is valued in the public eye solely by the visible results obtained in rat elimination and not by any array of figures which may be compiled. In consideration of this, sound principles of planning, administration, and execution must be employed. It may well be emphasized at this point that in the operation of programs of this nature

there are two basic requirements, to which all others may be considered secondary although necessary, and without which success cannot be enjoyed. These may be stated as (1) quality in performance of work, and (2) the understanding, coöperation and support of every individual or organization concerned. The first is assumed obviously to be a necessary requirement; however, unless care is exercised to avoid pressure from various sources, quality may be sacrificed for speed with failure, temporary or permanent, as the result. The latter involves appreciation by the people individually and collectively, of the magnitude of the problem of rat control, their complete and voluntary assistance and participation in it and the support of the local administration. Public support may come only with the passage of time, but the attitude of those in authority locally should be positive before the beginning of a program. They should understand the problem, be prepared to provide all the

requirements for its solution, and should be willing to support its permanent maintenance.

Rat control programs are by nature long-range, and in looking to the future it is believed that with proper planning and execution, the beginning which has been made can be expanded into a city-wide program, complete in its effectiveness. It may well be that in future years the Health Department can withdraw from performing actual rat control work, confining activities entirely to inspection services as is now the practice with respect to plumbing and electrical installations.

The acceptance and absorption of health education by the public, whether forced or voluntary, through practical and successful demonstrations, is the major factor on which results depend in any program, but especially one of rat control where the public itself is so closely associated with and responsible for the very existence of the problem.

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## International Health Organization

The Senate Committee on Labor and Education has reported favorably on the Senate Joint Resolution for forming an international health organization and recommends its early passage by the Senate. The resolution endorses the San Francisco United Nations Conference plan for an international health organization and requests the President to urge its prompt formation upon the U.N.O. A recent State Department Conference of Medical experts and civic leaders suggested the following functions for the international organization.

- a. World-wide collection of disease statistics as a basis for control of epidemics
- b. Standardization and control of drugs and other therapeutic agents
- c. Centralization, consolidation, and distribution of health and medical knowledge
- d. Assistance to national health services in controlling diseases at their sources and stimulation of further development of public health services

This committee pointed out that "Disease does not respect national boundaries . . . thus to protect ourselves we must help wipe out disease everywhere."

# Outbreak of Infectious Hepatitis, Apparently Milk-borne

W. J. MURPHY, M.D., AND L. M. PETRIE, M.D., F.A.P.H.A.

*Georgia Department of Public Health, Atlanta, Georgia*

AND

SAMUEL D. WORK, JR., M.D.

*Forsyth, Ga.*

OBSERVATIONS with respect to the spread of infectious hepatitis<sup>1, 2, 3</sup> have generally indicated person to person transmission and have led many to believe that the disease spreads by droplet infection. On the other hand, from the results obtained by Cameron,<sup>4</sup> MacCallum and Bradley,<sup>5</sup> Findlay and Wilcox,<sup>6</sup> Havens, Paul and van Rooyen,<sup>7</sup> and others,<sup>8, 9, 10</sup> in the experimental transmission of infectious hepatitis, it appears that the disease can be transmitted artificially to man by a number of routes. Furthermore, it appears that the icterogenic agent is present in the feces of the patient and that the disease can be produced in man by feeding such material in capsules. These findings suggest that under natural conditions food and drink may serve as vehicles for transmitting the infective agent and, in so far as water-borne transmission is concerned, they are supported by the observations of Neefe and Stokes,<sup>10</sup> and others.<sup>11</sup>

The purpose of this report is to present epidemiological evidence that the icterogenic agent of infectious hepatitis may be transmitted by milk. The observations reported here are based on a study of a small outbreak of 10 cases which occurred in Forsyth, Ga., during the period of May 21 to June 28, 1945. The study was made at the request of

the attending physician (S.D.W.) who had observed that all of the patients drank milk supplied by a single dairy.

The diagnosis of infectious hepatitis was based largely on the clinical picture which was quite similar to that usually described. The onset was gradual with fever, malaise, headache, and anorexia, followed shortly by epigastric distress, nausea, and usually vomiting. In several patients abdominal pain was quite marked while tenderness on the right side was generally observed. In most cases the acute symptoms subsided prior to the onset of jaundice which appeared after 3 to 10 days. With few exceptions, the jaundice lasted less than 2 weeks and was accompanied by characteristic changes in the stool and urine. None of the patients gave a history of previous injections of homologous blood products. Blood from 3 of the patients taken 3 to 4 weeks after the onset gave negative agglutinations with antigens of *Leptospira icterohæmorrhagiae*. The tests were made in the laboratories of the Georgia Department of Public Health, Atlanta, and of the Fourth Service Command, Fort McPherson, Ga.

In view of the apparent association of the outbreak with a single milk supply, visits were made to all homes supplied by that dairy. At each home



an epidemiological form was completed which included the household roster, history of illness, occupation, sources of water, milk, and other foods, neighborhood contacts, contacts with cases, school and church attendance, public gatherings attended, and other similar data. Subsequently, a canvass of the town was made in which every eighth home was visited, exclusive of those served by the dairy. During this survey information was obtained from 70 families with reference to the household roster, source of milk, and history of illness. Inquiries were also made as to any recent illness in the neighborhood or any past illness suggestive of infectious hepatitis. When such illness was reported, a visit was made to the case in question.

During the current year, infectious hepatitis was known to have occurred in only one household in Forsyth prior to the outbreak in May and June. Two cases occurred in that family. The date of onset of the second case was March 7, while that of the first, although indefinite, was at least several weeks earlier. The source of the original case was not determined but it was known that prior to his illness he had visited in another town where the disease was occurring. This family appeared to have had nothing whatever in common with those involved in the subsequent outbreak, and if any contact occurred it was purely casual.

The outbreak in May and June involved 8 households, 6 of which had single cases. The dates of onset for the first and last cases were May 21 and June 28, respectively. Onsets by weekly intervals beginning with May 21 were as follows: 1, 1, 1, 4, 2, and 1.

From inquiries relating to contact between the different households, it was learned that members of 4 of them had had occasional visiting contact with each other but not with the remaining 4 families. Of the latter, members of

only 2 appeared to have had more than casual contact in the past.

As for the patients themselves, histories of exposure were obtained from some but not from others. The 2 earliest cases appeared in widely separated households which had little in common. Neither of the patients reported any previous exposure, and only the second appeared to have had contact with any of the cases which followed. The fourth and sixth cases apparently had no contact with any of the others. Each of the remaining patients gave a history of exposure to one or another of the group but, in most instances, contact was limited to convalescent cases while in some it preceded the onset of symptoms by such a few days that person to person transmission could be assumed only on the basis of an incubation period much shorter than that usually observed. In view of the experience of other contacts, however, this did not appear likely. Under similar conditions of exposure, the disease failed to spread to neighborhood contacts. Many neighborhood children had been exposed to various convalescent cases but, as of August 15, none of them had shown any symptoms of illness. Moreover, the disease did not spread readily among familial contacts. In only 2 households did second cases appear and these developed after intervals of 13 and 29 days. On the whole, the evidence relating to contact spread did not appear sufficient to explain the outbreak on that basis.

With respect to a common source of infection, evidence tending to incriminate any food or drink, except milk, was entirely lacking. Foods were obtained from several different sources and were prepared individually in each of the various homes. Only 3 of the patients had eaten meals away from home. There was no history of attendance at any common gathering where

food or drink was served. As for water, all homes in Forsyth are supplied from the same source. There was no evidence of contamination and, furthermore, the observed distribution of cases along a single milk route is not consistent with water-borne transmission. The most significant factor encountered appeared to be the common milk supply.

The people of Forsyth obtain milk from many sources. Five dairies supply the needs of approximately one-half of the population, while the remainder obtain whole milk from numerous small producers, canned milk from local stores, or none at all.

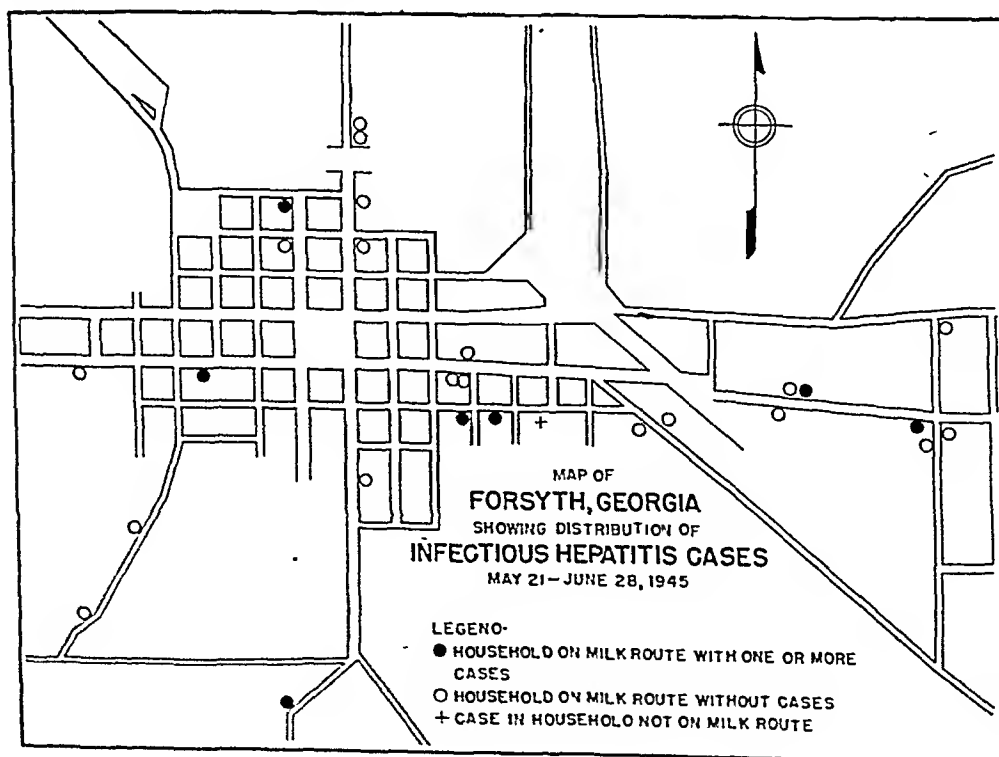
Based on the sample population obtained during the canvass, there are 586 households with 2,390 individuals in Forsyth. According to the United States Census, the population in 1940 was 2,372. The dairy under suspicion supplied raw milk to 26 households with 114 consumers, the figure in each instance being slightly less than 5 per cent of the total. The latter figure includes 4 persons who were not perma-

nent members of any of the 26 households but who ate so frequently in one or another of them that they might well be considered as regular consumers of the milk.

Of the 8 households involved in the outbreak, 7 were supplied with milk by the dairy in question. Moreover, the single case in the remaining household drank milk regularly in the home of his grandmother who was a daily customer of the dairy. One of the 10 patients actually lived in another city some 20 miles away but divided her time between her own home and that of a relative in Forsyth who was served by the dairy. From April 26 to the onset of her symptoms on June 13, she visited in Forsyth every week. During that period, no known cases occurred in the city in which she lived.

The 26 households supplied by the dairy are widely scattered throughout the town. This is shown in the accompanying map. Similarly, the households with cases are widely scattered.

As usually observed, the cases oc-



curred chiefly among those under 20 years of age. Below are shown the attack rates by age for the 114 persons who were regular consumers of the milk.

Age (Years)	Number Persons	Number Cases	Rate per 1,000
Under 20	38	9	236.8
20 and over	76	1	13.1
Totals	114	10	87.8

Of the 10 cases with frank jaundice, 2 occurred in preschool children, 5 in school children, and 3 in persons above school age. In addition to these, 4 other individuals in the group gave a history of symptoms somewhat similar to those described above but without the appearance of jaundice. They were all under 20 years of age.

In contrast to the findings in the consumer group, only one suspicious case was found among the remaining population of Forsyth. Late in June this child developed symptoms of nausea and vomiting and a slight temperature. At the same time, it was thought that she appeared more deeply tanned than usual. Recovery was complete in 3 days. The child was not seen by a physician and the symptoms were too indefinite to establish a diagnosis. Three weeks prior to the onset, the mother of the child visited one of the frank cases of hepatitis. Other than that, there was no history of contact with any known case.

The apparent absence of infectious hepatitis among those who did not drink the milk is quite striking. There are approximately 900 persons below the age of 20 years in the non-consumer group. Had these experienced the same attack rate as those who drank the milk they would have contributed 213 cases.

The 10 frank cases in the outbreak developed over a period of more than a month. This implies either a great variation in the incubation period of the disease or the infection of different patients at different times. The latter

possibility would have required contamination of the milk on more than one occasion. In view of the methods employed at the dairy, that possibility did not appear unlikely.

The dairy is located 3 miles from Forsyth and consists merely of an ordinary barn, completely devoid of all sanitary conveniences for handling milk. Approximately 100 feet from the barn is the home of the dairyman. A second house nearby is occupied by a family of relatives who moved from a neighboring state during the month of March.

No recent illness had occurred in the dairyman's family except for a mild "gastric upset" in one of 3 children which lasted for only a day or two. In the neighboring family, however, 2 cases of infectious hepatitis occurred during April and May. The symptoms in both patients were very similar to those described above. It was not possible to obtain exact dates of onset, but apparently the first case developed prior to April 15 and the second one toward the latter part of May. During this same period a third member of the family developed suspicious symptoms, but the history was too indefinite to establish a diagnosis. The source of the original case was not determined but her symptoms began within a week or two following her arrival in Georgia. There was no history of contact between these cases and those which subsequently developed in Forsyth.

This family lived in intimate contact with that of the dairyman, but apparently did not assist in caring for the milk or the utensils. Due to the primitive conditions under which the milk was prepared for delivery, however, it is possible that contamination may have occurred in other ways.

The cows were milked in a yard adjacent to the barn. The milk was then carried to a table located in the open near the barn and was simply poured

into the bottles. Everything was done by hand without any apparent attempt to prevent contamination.

Water for washing the utensils was obtained from an open, chain and bucket, dug well located about 20 feet from the table on which the milk was handled. Contamination of the well could have occurred from surface drainage or from the hands of anyone who raised a bucket of water. Experience with wells of this type has shown that in practically all instances the water shows evidence of contamination and, therefore, no samples were collected for bacteriological examination.

Located less than 100 feet from the well was a dilapidated surface toilet which was used by both families. Drainage from that point did not appear to be in the direction of the well. Apparently, however, it was not a rare practice for urine and feces to be deposited elsewhere on the surface of the ground.

Flies were numerous and were much in evidence during milking hours. They had easy access to the toilet as well as to the milk bottles and all other utensils. This combination of circumstances—numerous flies, insanitary surroundings, and unprotected food—has previously been noted in connection with an outbreak of infectious hepatitis.<sup>12</sup>

It is apparent that conditions at the dairy were such as to make it possible for the infective agent to gain entrance to the milk supply. It may have been carried by flies or it may have reached the milk through the water supply. Moreover, in view of the intimate contact between the two families, other possibilities cannot be excluded. In any event, contamination might well have occurred on more than one occasion.

#### SUMMARY

The evidence gathered during the course of this investigation, while purely circumstantial in character, points quite

definitely toward a single milk supply as the source of the outbreak. The sequence of events and the distribution of cases follow the general pattern observed in milk-borne outbreaks of other diseases. It was established that, prior to the outbreak, at least 2 cases of infectious hepatitis lived in close proximity to the source of the milk supply. Conditions at the dairy were such that contamination of the milk was possible. Subsequently, within the limits of the incubation period, cases appeared among consumers of the milk but not among non-consumers who were 20 times more numerous. Considering the conditions at the dairy, together with the observed distribution of cases, the possibility of the outbreak being unrelated to the milk supply appears to be remote.

#### REFERENCES

1. Pickles, W. N. Epidemic Catarrhal Jaundice. An Outbreak in Yorkshire. *Brit. M. J.*, 1:944, 1930.
2. Pickles, W. N. *Epidemiology in Country Practice*. 1939, p. 59.
3. Molner, Joseph G., and Meyer, K. F. Jaundice in Detroit. *A.J.P.H.*, 30:509, 1940.
4. Cameron, J. D. S. Infective Hepatitis. *Quart. J. Med.*, 12:139, 1943.
5. MacCallum, F. D., and Bradley, W. H. Transmission of Infective Hepatitis to Human Volunteers. *Lancet*, 2:228, 1944.
6. Findlay, G. M., and Wilcox, R. R. Transmission of Infective Hepatitis by Feces and Urine. *Lancet*, 1:212, 1945.
7. Havens, W. P., Paul, John R., and van Rooyen, C. E., and others. Human Transmission of Infective Hepatitis by the Oral Route. *Lancet*, 1:202, 1945.
8. Paul, John R., Haven, W. P., Jr., Sabin, A. B., and Philip, C. B. Transmission Experiments in Serum Jaundice and Infectious Hepatitis. *J.A.M.A.*, 128:911, 1945.
9. Voegt, H. Zur Aetiologie der Hepatitis epidemica, München. *Med. Wchschr.*, 89:76, 1942; abst. *Bull. Hyg.*, 17:331, 1942.
10. Neefe, John R., and Stokes, Joseph, Jr. An Epidemic of Infectious Hepatitis Apparently Due to a Water Borne Agent. *J.A.M.A.*, 128:1063, 1945.
11. Fraser, R. A Study of Epidemic Catarrhal Jaundice. *Canad. Pub. Health J.*, 22:396, 1931.
12. Kirk, Raymond. Spread of Infectious Hepatitis. *Lancet*, 1:80, 1945.

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## MAZYCK PORCHER RAVENEL

WITH the death of M. P. Ravenel on January 14, 1946, there passed one of the very few survivors of a unique band of pioneers—men who brought the new science of bacteriology to the United States, and who built upon its firm foundation the modern practices of public health.

Ravenel was born at Pendleton, S. C., some eighty years ago,<sup>1</sup> of a French Huguenot family which has given to its state and nation a remarkable number of men of distinction in science and in medicine. He took his medical degree at the Medical College of South Carolina in 1884, and studied at the University of Pennsylvania, at the Pasteur Institute, at Halle and Genoa. He taught at his medical alma mater, and practised medicine in Charleston for six years. In 1895, he was the first director of the Hygienic Laboratory of the New Jersey State Department of Health. Between 1896 and 1907, he worked in Philadelphia, teaching at the University and serving as bacteriologist of the Pennsylvania State Live Stock Sanitary Board and as Chief of the Laboratory of the Phipps Institute. In 1907 he went to Wisconsin as Professor of Bacteriology; and in 1914 became Professor of Preventive Medicine and Medical Bacteriology, and Director of the Public Health Laboratory at the University of Missouri, a post which he held until 1936.

The major part of his life was spent as a teacher (with time out for service as a Major and Lieutenant-Colonel in the Army Medical Corps during the first World War). His research contributions were chiefly in the field of diseases common to animals and men (anthrax, rabies, and tuberculosis).

While with the Pennsylvania Live Stock Commission, he demonstrated the transmissibility of bovine tuberculosis to man (1902); and, in 1908, at the Sixth International Congress on Tuberculosis, courageously and successfully challenged the great Koch on this point. He made substantial contributions to our knowledge of milk sanitation and was an early and ardent champion of pasteurization.

Dr. Ravenel had a fine historical perspective, and his editorship of *A Half Century of Public Health*, the Jubilee Historical Volume of the American Public

Health Association (1921) gave us a record which will always remain a classic in the history of our science.

This was but one of many services which Ravenel rendered to the Association. He was its President in 1920; and from 1924 to 1941 was the Editor-in-Chief of this *Journal*. He took it over as "an ordinary association record book" and handed it on as "the outstanding public health publication in this country."<sup>2</sup> In the entire history of the *Journal* no one man, or any group of men, has made such significant contributions to its success as Dr. Ravenel.

What a man is, is even more important than what he does. Ravenel's great contribution to his colleagues and to the cause he served was Ravenel. In the remarkable tributes paid to him on the occasion of his designation as Editor Emeritus five years ago,<sup>3</sup> there recur such phrases as "vigor," "devotion," "integrity," "forthrightness," "uncompromising scholarship." He did not suffer fools or blunderers gladly. He "punctured balloons" with ardor. He was a "paternal castigator" of the careless and inexact. These phrases help to build up a picture of the Ravenel we knew and honored—a man of wide and exact knowledge, of ardent devotion to the truth and to the causes which he served, of relentless courage and integrity. This *Journal*, this Association, and the cause of public health in the United States owe to M. P. Ravenel a deep and abiding gratitude.

#### REFERENCES

1. The date of Ravenel's birth does not appear in the standard works of reference. He graduated from college in 1881.
2. Henry F. Vaughan.
3. *A.J.P.H.*, 31:1-9, and 79-81 (Jan.), 1941.

## PROBLEMS OF NEONATAL MORTALITY

RECENT years have brought marked reductions in infant mortality in this country, so that in some areas rates below 30 are now recorded. This result has been accomplished by a marked decline in the number of deaths occurring after one month of age, and due to gastroenteritis, acute infectious diseases, and respiratory diseases. In contrast, deaths within the first month of life attributed to natal and prenatal causes have not declined as rapidly. To the latter causes, four-fifths of infant deaths under one month of age have been attributed. It is evident that further substantial reductions in infant mortality rates await development of methods of preventing deaths commonly associated with birth injury, congenital malformations, and premature birth.

Such causes of infant deaths have long been a problem to pediatricians and obstetricians but today new knowledge seems to be available which should help us to deal with them. It is therefore of particular interest to have three of these causes—the Rh factor, vitamin K, and the rubella virus—discussed in detail in a special review article prepared for this issue of the *JOURNAL* by Dr. Edith L. Potter. Not all experts would agree with Dr. Potter's conclusions concerning the value of giving vitamin K routinely in pregnancy. The Johns Hopkins Hospital, for example, we are informed, uses vitamin K prophylactically and has not had a single case of hemorrhagic disease of the new-born in the last 10,000 deliveries, a condition not prevailing before the use of this procedure.

What does all this mean for health departments and for physicians and institutions concerned with the prevention of infant morbidity and mortality?

Dr. Potter has estimated that there were 8,000 infant deaths (including stillbirths) in the United States in 1943 due to erythroblastosis. She bases her estimates on the diagnoses made in the Lying-In Hospital in Chicago, probably a highly selected sample. In New York City, in the period of a special study of this problem, there were 65,489 live births, with 43 deaths attributed to erythroblastosis, an incidence of 6.6 per 10,000 live births. In the same period of time there were 11 deaths due to congenital syphilis, an incidence of 1.7 per 10,000. It should be noted that Rh testing is a fairly general practice in New York City and Wassermann testing in pregnancy is mandatory. Thus, under conditions probably as good as any which prevail in this country, there are almost four times as many infant deaths associated with the Rh factor as with the *Treponema*. It therefore seems important for health departments to concern themselves with the Rh problem. Some may wish to provide the private physician through their own laboratories with Rh tests, even as diagnosis of diphtheria cultures and Wassermann tests are provided. Some may supervise other laboratories in which Rh tests are done or supply materials for such testing. (The technique is simple, usually requiring only an hour's incubation at 37° C. with a potent antiserum and a satisfactory reading.) Some departments may supervise or even operate blood banks. It must be recognized that, until further control measures are developed, deaths and morbidity associated with the Rh factor will continue, but accurate diagnosis is always a first step in any preventive program.

The provision of vitamin K by health departments for the possible prevention of hemorrhage does not seem out of line with the provision of toxoid for prevention of diphtheria or of anti-syphilitic drugs. Deaths from hemorrhagic disease are equally preventable.

Certainly further study of the problem of rubella infections and congenital malformations is indicated. Albaugh<sup>1</sup> has recently reported that "100 per cent of the mothers who contract rubella in the first two months, and approximately 50 per cent of those who contract it during the third month, will give birth to infants with congenital anomalies." Cataracts, cardiac septum defects and patent ductus arteriosus, deaf mutism and microcephaly are common lesions, and nearly all of the infants are poorly developed and present feeding problems.

Further clinical studies on the efficiency of gamma globulin and protective sera in preventing damage due to the rubella virus are needed; and our state and city health departments are in a position to supplement such clinical investigations by detailed routine analysis of birth certificates and intensive study of infant deaths.

#### REFERENCE

1. Albaugh, C. H. Congenital Anomalies following Maternal Rubella in Early Weeks of Pregnancy. *J. A.M.A.*, 129:719 (Nov. 10), 1945.

## DOGS AND BABIES

THE State of New York is in the throes of one of the bitterest attacks on the freedom of scientific investigation which have confronted the legislature of any state in recent years. The particular form of the assault on the present occasion is a demand for the exemption of dogs from medical experimentation which is being advocated with daily iteration by an irresponsible section of the public press.

For the moment, the anti-vivisectionists have apparently abandoned their high ethical principles which would logically forbid the taking of animal life in any form. They are not concerned with the wanton destruction of malaria-carrying mosquitoes or with the slaughter of food animals. They have even forgotten the guinea pig for whom they have been so solicitous in the past. Only the canine is now singled out as having natural rights which contravene the most fundamental bases of the public welfare and which would cut short the brilliant progress of medical science in the saving of human life.

It happens that the writer of this editorial is known to all his friends as a doting dog owner; but he happens also to be a father. He knows, as every intelligent person should know, that the entire framework of modern medicine rests upon animal experimentation; and that in many lines of investigation the dog is the only animal that can provide the answers we need. This is even more true at present than it was in the past. The relatively simple problems involved in the control of diphtheria for example could be solved by studies on guinea pigs and rabbits. The elder of our readers will recall the thrilling story of the speeding of antitoxin by dog-sled to a child critically ill at Nome. Men and dogs in Alaska, and guinea pigs in the laboratories where the secrets of diphtheria were unveiled, all shared in this triumph.

Today, however, when the plagues and pestilences of the past are coming under control, the issues of human life and health depend much more upon a knowledge of physiology than of bacteriology. Here, the smaller animals—more remote in their structure from man—will not serve. The studies on nutrition which gave us victory over pellagra, the discovery of insulin which has removed the worst terrors of diabetes, the brilliant conquest of anemia by the use of liver extract—all these were made possible by experiments on dogs. Our understanding of the working of the central nervous system and the control of shock during the war and in the hospital today rests on work with dogs. So do many procedures in modern surgery. So does the testing of new and promising drugs. The clock of medical progress would be stopped by any such restriction as that proposed in New York.

As both a dog lover and a parent, I would choose my child's life or my wife's rather than my dog's. So perhaps would the dog, if he understood the emergency; for there are plenty of instances in which these devoted animals have risked and sacrificed their lives for their human friends.

This editorial was originally headed "Dogs or Babies," but such a title involves a false distinction. The canine race profits as much as the human race from the blessings of biological science. Pasteur, through his work on anthrax and rabies, was probably the greatest benefactor of domestic animals who ever lived. Millions of dogs have been saved from suffering and death because hundreds of dogs were employed in experiments on rabies and distemper. The value to dogs of experimentation with penicillin holds great promise for the future.

So both dogs and babies have a stake in this issue. Caninitarians as well as humanitarians should unite to counter a sinister attack on the pursuit of sciences which are vital to the welfare of both dogs and men. It is our hope that public health workers as well as doctors and nurses will organize to meet the challenge which has been presented in New York State.



## FIELD TRAINING FOR PUBLIC HEALTH PERSONNEL

AN opportunity for studying the actual practice of functioning health organizations is an essential part of any sound academic training of public health personnel. It corresponds to the ward rounds in the last two years of the medical course; and like those ward rounds, it involves no mere observation but a critical analysis of a series of concrete problems.

In addition to this type of training, which is a normal part of the work for the M.P.H. degree, many educators and, perhaps, most administrators, believe that the prospective public health worker should have an additional period of 3 to 12 months spent as a worker-in-training in an organized health service. This is a requirement parallel with the year of hospital internship. Such field training may be received before the student takes up his formal academic work, or after that work is completed, or both. The New York State Department of Health has provided excellent facilities for preliminary in-service training, and believes that the question of whether a candidate is worth academic instruction can best be determined in advance.

A period of post-academic training of at least three months' duration is required for students in all schools of public health nursing and in several schools of public health. All the students of health education financed in recent years through the U. S. Public Health Service have been required to take such field training; and in several schools they must complete field training satisfactorily before receiving their degree. Such a requirement seems by no means unreasonable. It is based on the same assumption as that which requires a thesis from a candidate for a research degree—the assumption that the student must prove his competence not merely by passing an examination, but by demonstrating that he can actually apply his knowledge to a concrete problem.

Growing interest in such field training naturally raises the question where—and how—such training may be provided. Clearly it can only be in health services of high quality; but, in addition to such quality, it will require very special facilities in the way of supervision. Our best precedents come from experience in public health nursing and from the work of the Michigan Field Training Center operated by the State Health Department and seven local departments jointly with the W. K. Kellogg Foundation. Dr. Horning and Miss Tuttle describe this pioneer enterprise in articles carried in this issue of the JOURNAL.

It seems possible that our Committee on Professional Education may soon find it desirable to prepare standards for the accreditation of field training areas for extensive experience. The development of such areas will require a supervisory staff qualified for their direction; and it would seem reasonable to ask the U.S.P.H.S. to finance such staffs, since the benefits to be derived from their services will be more than state-wide.

SEVENTY-FOURTH ANNUAL MEETING  
AMERICAN PUBLIC HEALTH ASSOCIATION  
CLEVELAND, OHIO — NOVEMBER 11

## Credit Lines

### NEWS ON THE POLIO FRONT

Two reports recently published by The National Foundation for Infantile Paralysis repay study. The Foundation's annual report for the year ended May 31, 1945, analyzes fully the inter-related activities, chief among which are programs of research and education. Of the total of nearly 3 million dollars expended during the year, more than \$400,000, or about one-seventh, was for research; less than \$300,000, or 10 per cent for education; and over 2 million, three-quarters of the total, for epidemics and public health appropriations, the Georgia Warm Springs Foundation, and Tuskegee Institute.

This represents perhaps the first time in history that a voluntary health agency dependent upon public subscription has found it possible to allocate such large sums to basic research. Of the total expenditures for research, over \$200,000 was for virus research in 8 universities or medical schools and one state health department, and nearly \$200,000 for research for the prevention and treatment of aftereffects in 8 universities and medical schools, one hospital, and the U. S. Public Health Service.

A significant aspect of the research and educational work of the Foundation is that it does not set up its own laboratories and institutions and thus preserves the advantages of many minds in many settings.

The second of the Foundation's reports deserving a careful study is *Facts and Figures about Infantile Paralysis*. This is a historical and statistical study. Infantile paralysis was first reported in the medical literature of the United States by Caverly, who reported its occurrence in the Otter Creek Valley of Vermont in 1894. The first major epi-

demic centered around the eastern seaboard states in 1916.

The statistical data include maps showing the distribution of polio cases in the United States for each year 1933-1944, tables showing cases and deaths for each year 1915-1943 and a variety of other tables and charts. A pictograph chart based on the 1941 Maryland epidemic shows 50 per cent of 290 cases with no aftereffects, 29 per cent with slight aftereffects and 18 per cent, nearly one in five, with marked aftereffects, and 3 per cent of fatalities. This report and the interpretive comments of the Medical Director, Dr. Don W. Gudakunst should have a wide distribution among physicians, students, and health workers.

### OFFICIAL STATE ACTION ON PROBLEMS OF ALCOHOLISM

Historically the alcoholic has seldom been regarded as a public health responsibility, or indeed a public responsibility. However, there has recently been considerable activity both in official and unofficial agencies. Among the most important developments are those in official state bodies. The *Journal* is indebted to the Research Council on Problems of Alcohol for copies of its *Bulletins* from which was abstracted the following information on current state activities with respect to the problems of alcoholism.

The recent legislative sessions of several states have established Commissions or Boards for the care of inebriates.

1. The *Connecticut* Legislature of 1945 enacted "sound legislation for the study, care and treatment of alcoholics and to provide for the creation of a board which is authorized to make a study of the problem of alcoholism to make its findings public, to set up diagnostic and rehabilitation centers and to con-

duct outpatient clinics." The Act creating the Board provides for financing its work from 9 per cent of all funds received by the State Liquor Control Commission, which it is estimated will make from \$200,000 to \$225,000 available annually. The Board is authorized to study the problems of alcoholism, including methods and facilities available for the treatment, custodial or otherwise, and rehabilitation of alcoholics, and to provide for institutional care where necessary. The Chairman of the Board is Professor Seldon Bacon of Yale's School of Alcohol Studies, and two of its five members are physicians—Dr. Thomas P. Murdock, former President of the Connecticut State Medical Society, and Dr. Arthur H. Jackson.

The law setting up the Board of Trustees for Inebriates provides for commitment to the custody of the Board any habitual drunkard who has been three times convicted of intoxication, or who has lost the power of self-control from the intemperate use of intoxicating liquors. It further provides that any person who requests such assistance must be accepted for treatment by the facilities of the Board.

2. The *Alabama* Legislature of 1945 created a "Commission on Education with respect to Alcoholism," with power "to prepare and administer a program for the rehabilitation of alcoholics and the education of the public with respect to dealing with alcoholism as a disease." An annual appropriation of \$5,000 is made available. The seven-member Commission includes Dr. B. F. Austin, the State Health Officer; four other members serve ex officio as heads of other state departments. Two members are citizens without other official capacity.

3. The 1945 *New Jersey* Legislature created the New Jersey Commission for the Rehabilitation of Alcoholics and Promotion of Temperance, making \$25,000 available for the first year. The four-man Commission is made up of heads of state departments related to the problem—Dr. J. Lynn Mahaffey, State Commissioner of Health, Commissioners of Institutions and Agencies, of Education, and of the Alcoholic Beverage Control Board. The program includes a survey of current available facilities, establishment of an information and referral center, establishment of one or more clinics, and a working arrangement with courts so that cases of alcoholism would be turned over to the Commission's authority rather than be sentenced to jail.

4. In 1945, the Legislature of *New Hampshire*, by resolution, created a seven-man Commission to study alcoholism and related problems, its expenses to be charged against

the revenues of the state Liquor Commission. The new Commission is directed to gather data on the physiological, economic, and social effects of the use of alcoholic beverages, study methods of treatment and rehabilitation of alcoholics, as well as methods of preventive public education. The Commission, whose members serve without pay, is to file its finding and recommendations with the 1947 legislature.

5. The *Massachusetts* Legislature of 1943 created a special Commission to investigate the Problem of Drunkenness in Massachusetts, with special reference to determining whether medical rather than penal treatment should be recommended for alcoholics. In 1945 its 381 page report was submitted to the Legislature with recommendations. Two of these have been favorably reported on by the Committee on Public Health—one for the establishment of a state hospital for the treatment of alcoholics and one for a permanent commission to study the problem of drunkenness. However, no action has yet been taken by the State Legislature on these recommendations.

6. The *Delaware* State Post-War Planning Program includes construction of a new building for alcoholics without psychoses. This plan was presented to the State Legislature in 1943 by the Council of Presidents of all Boards of State Agencies and the Council of Executives of all State Agencies.

7. The *Illinois* Department of Public Welfare organized a "Committee on the Problem of Alcoholism" early in 1944. One building of the Chicago State Hospital has been set aside exclusively for the treatment of inebriates. This program is being carried on in cooperation with Alcoholics Anonymous.

8. A subcommittee to make a study of the entire problem of alcoholism in *Virginia* in 1944 recommended the creation of a farm and plant for the treatment of inebriates, requiring a capital outlay of \$1,000,000 and annual operating expenses of approximately \$300,000. Although the proposal had the endorsement of both the Governor and the State Hospital Board, no action was taken by the 1944 Legislature. Active efforts to pass the proposed measure are in progress in the 1946 legislature now in session.

State Liquor Control Commissions have also been active. The 1943 *Oregon* Legislature directed its Liquor Control Commission to carry on an educational program in the public schools and among the general public on the harmful effects of over-indulgence in

alcohol. It has published a pamphlet on the dangers of excessive drinking, with the arresting title "Who—Me?"

The New Hampshire Commission investigates all cancellations of drivers' licenses, for driving while drunk, for information as to where they obtained liquor and in what condition they left the inn where served; and other information to serve as a basis for citing tavern keepers for violations. The latter are thus impressed with their responsibility for preventing drunken driving.

As Dr. Paul B. Brooks said in his column of December 24, 1945, before retiring from the *New York State Health News*: "Yes, sir. Things are stirring in the alcohol line and it ain't just cocktail shakers. Folks are coming to recognize that it's a health and not a moral problem. And it's like world peace: When the interested parties can agree on the general principles of a program—they can't expect perfection but there's hope of getting somewhere."

#### RHEUMATIC FEVER—ARE WE DOING ENOUGH?

In "Facts about Rheumatic Fever," written in simple, lay language, the Children's Bureau tells all of us, particularly parents, what we need to know about rheumatic fever, what is being done through state programs for the care of child sufferers from the disease, and what is still left undone. Rheumatic fever is serious because it kills more school age children in the United States than any other disease. For every child who dies there are many more who have long drawn-out attacks lasting many months. There are simple facts about the prevention and care of rheumatic fever and a statement of the state programs authorized by the Social Security program, provided local and state agencies initiate such programs and seek federal aid. The program has included care of children with rheu-

matic fever only since 1939. By May, 1945, 18 states had approved programs—diagnostic services, medical care, convalescent and rehabilitation services. Even these reach the children of less than 10 per cent of the 3,070 counties in the United States.

#### STATE HEALTH DEPARTMENTS' CONCERN WITH SCHOOL HEALTH

The concern of state health departments with school health programs is highlighted by the fact that two state health departments—Arkansas and Oklahoma—have each given over two recent bulletins to the discussion of school health problems. The September issue of the *Arkansas Bulletin* summarizes the Summer Workshop on School and Community Health Education held at Arkansas State Teachers College and attended by 71 teachers from 50 counties. The subject matter was provided by the State Department of Health and the educational techniques and procedure by the Department of Education. Scholarships were made available by the Children's Bureau. The November issue of the same bulletin summarizes the report of Dr. George M. Wheatley, "Present Status of School Health Service," given at the 1945 Conference of State and Territorial Health Authorities.

The October *Oklahoma Health Bulletin* is devoted entirely to school health subjects, a general discussion by the State Health Commissioner, Dr. G. F. Mathews, and one by Governor Kerr on the importance of adequate school sanitation. Other articles discuss the function of the public health nurse, and dental care of the school child. The November issue continues the subject with a discussion of the teacher's responsibility and a description of a school health program in a two room rural school in Seminole County.

From California also comes word of activity in the school health field. Dr.

George M. Wheatley, Secretary of the School Health Section, has sent Credit Lines editors a copy of Recommendations Relative to the Administration of the Health Program and to Requirements in Health Education for the General Secondary Credential in Teacher Training Institutions. These recommendations grew out of a coöperative community health education workshop held at Huntington Lake last summer. The State Departments of Public Health and of Education jointly sponsored the work, funds having been made available by the W. K. Kellogg Foundation. Also at hand is the September 15-30 issue of *California's Health* of the State Health Department, which, "in response to requests from local health departments" gives "suggestions concerning an educational program to precede and accompany school immunization and tuberculosis case finding programs."

#### ANNUAL REPORTS

Homer Folks, Secretary of the State Charities Aid Association of New York, takes the occasion of the 1944 annual report of his organization to summarize some of the health and welfare needs that have been crystallized by the war. They are:

1. The vast extent of mental and nervous difficulties about which useful things may be done. The fact that nearly one-third of rejections by Army induction boards were for mental and nervous factors indicates conditions about which we can no longer tolerate relative inaction.

2. Public health looms larger and larger as one of the greatest opportunities which any country, governed by an enlightened public opinion, must embrace.

3. Purchase of health and welfare of school children is a prime investment, as shown by the poor condition of so many of the 13-year olds.

4. Medical care, however excellent its quality in many areas, has obviously not been availed of soon enough and seriously enough by a considerable proportion of the American people. They cannot afford to fail to take steps to change such conditions.

The report of the National Tuberculosis Association for the year ending March 31, 1945, celebrates the creation of a Division of Tuberculosis Control in the U. S. Public Health Service as the natural culmination of the Association's many years of activity. It also announces a news letter, "Que Hay de Nuevo." Issued three times during the year, it reports new developments in tuberculosis control among Spanish speaking people. Financial aid was also given for reestablishing the work of the Philippine Islands Anti-tuberculosis Society, interrupted by the war. Field service was provided for the St. John's Rotary Club in organizing the Newfoundland Tuberculosis Association which conducted the 1944 Seal Sale for the province.

The association expended over half a million dollars during the year and ended with a surplus of approximately a quarter of a million. It expended \$25,000 for social research and \$65,000 for medical research. For special work in tuberculosis among Negroes \$20,000 was spent, and about \$3,500 for work among Spanish speaking people; \$10,000 was given to the International Union Against Tuberculosis.

*Many Paths . . . One Purpose*—The 1944-1945 report of the Milwaukee County Council of social agencies is notable for typography, illustrations and format, and shows what can be done by an imaginative use of present-day processes that are cheaper than printing. Its title too, is descriptive. "We stand," says the report, "in the front line of service to man's unchanging, human needs in a world of crashing change."

#### MEDICAL SUPPLY HOUSE PAMPHLETS

Pamphlets of several of the drug and medical supply and other concerns have been accumulating on the Credit Lines desk. It seems fitting to mention some

of their contents in recent months. The following are nominated for honorable mention:

*What's New*, of the Abbott Laboratories for its series of War Paintings.\* The October and November, 1945, issues respectively are numbers 8 and 9 in the series, the China-Burma-India Theater with paintings by Howard Baer, and the Southwest Pacific, by Robert Benney. These paintings are also being shown at various exhibitions throughout the country. If anyone is still unable to visualize the horrors of war, let him see these paintings.

*Therapeutic Notes*, of Parke, Davis & Co. For its general excellence of workmanship and color illustrations. The cover of its October, 1945, issue symbolizes Roentgen's discovery of the X-ray on November 8, 1895.

*The Prevention of Communicable Diseases in Childhood*, of Lederle Laboratories, with sprightly pastel color illustrations and graphs tells briefly and simply the story of immunization in diphtheria, scarlet fever, measles, smallpox, tetanus, whooping cough, typhoid.

*Scope*, of The Upjohn Co. for its Basic Science Review Service Series, No. 12 of which describes *The Anatomy of the Adrenal Glands*, illustrated with beautifully executed drawings in color. The same issue has an article on Oral Penicillin.

*Roche Review*, of Hoffman-La Roche, Inc. and Roche Organon, Inc. The September and October, 1945, issues summarized in tabular form the literature on the use of vitamins and drugs, including photographs of the crystalline forms of various vitamins.

All of these have excellent paper, format, typography, and color photography.

\* This series has now been published in one volume, *Men Without Guns*, by DeWitt Mackenzie. 155 pp. 177 illus. Obtainable from The Book Service. Price, \$5.00.

#### DENTAL HEALTH IN INDIANA

The October issue of Indiana State Board of Health *Monthly Bulletin* is its first "dental issue" and is devoted entirely to the problem of dental public health. Included among more general articles is one on diet control of dental caries, a geographic fluoride survey of Indiana ground water supplies, an analysis of the distribution of

dental students and dental care, and a story of dental programs carried on by Indiana industries. It ends with an Edgar Guestian "pome" called "Farewell, My Sweets!" by Dr. Thurman B. Rice.

#### ORCHIDS TO BALTIMORE

Credit Lines recognizes the outstanding success of *Baltimore Health News*, the monthly publication of the Baltimore City Health Department, Huntington Williams, M.D., Dr.P.H., Commissioner, for personalizing the staff and the program of the Department of Health. The December, 1945, number, for example, reprints photographically an editorial from a local paper on the retirement of the Director of School Hygiene in Baltimore, notes the completion of 40 years of continuous school health work of another staff member, gives credit to the alertness of the chief dietitian in one of Baltimore's hospitals in averting an outbreak of food poisoning, pictures a laboratory staff member now with the Medical Corps of the Navy, and gives an illustrated sketch of the career of a young woman now directing medical research at the Communicable Disease Hospital in Baltimore.

The people of Baltimore will not fail to be more appreciative of the individuals who serve them through the City Health Department and their specialized activities because of this well directed and executed policy of *Baltimore Health News*.

#### RACE PRACTICES OF NATIONAL ASSOCIATIONS

The American Civil Liberties Union has recently completed a survey of race practices in some 150 semi-public national associations, not of a religious or fraternal character. The survey was made by questionnaire regarding which the report says "It is clear that precise listing is impossible without knowing

more detail than a simple questionnaire affords, and without examining through additional evidence whether professions of non-discrimination actually so work out in practice." Also the questions were devoted largely to discrimination against Negroes, with only one general question as to other minorities (aliens, citizens of oriental ancestry).

With these qualifications 93, two-thirds of 141 associations, reported no racial segregation or discrimination, 40 reported segregation only in local or state chapters, 3 reported discrimination but not segregation, 3 reported complete segregation and 2 exclude Negroes altogether.

The American Public Health Association is among those of a list of 9 health and medical associations that have no policy of racial discrimination in admission to membership. Among others are the American Heart Association, American Hospital Association, American Medical Women's Association, and the American Psychiatric Association.

#### TOWARD THE CONSOLIDATION OF LOCAL GOVERNMENTAL UNITS

*Taxation*, of the Minnesota Taxpayer's Association for August, 1945, reports an interesting study in Blue Earth County, Minnesota. This is one of three rural county studies sponsored by the Spelman Foundation and requested by the U. S. Bureau of the Budget. The Director of the Budget wanted to find out whether federal sums to local communities for various purposes, among them local health service, were weakening or destroying local government.

The study was carried on by a local council without direction or supervision from Washington, the State Capitol, or any other source. It found in this county of fewer than 37,000 persons, 298 agencies of government with nearly 700 officers and employees. Among

them were 155 separate tax-levying units of government.

The report recommends that, save where there are widely overlapping and conflicting services, these local governmental units should be maintained and strengthened. To revitalize them, however, and encourage them wherever possible to take over some of the responsibilities now exercised by the state and local officials, the Blue Earth Council suggests a plan for the formation of an intergovernmental council in each county to serve in the first instance as a clearing house and a coordinating body. An Act of the 1943 Minnesota Legislature makes this possible by giving any groups of local governing units the right to join together to do what any one of them is empowered to do independently. Thus a great step forward has been taken, for example, in developing the climate in which the 2,700 units of local health jurisdiction in Minnesota can be consolidated into far fewer and more effective working units.

The other two counties being studied are Henry County, Indiana, and Cloquett County, Georgia. It will be interesting to see whether they too recommend strengthening of local government through intergovernmental cooperation, rather than an extension of state or federal control in local services.

#### WORTH ACQUIRING

*And Now, Home*—A series of unit programs on the reintegration of the returned soldier to community life, this pamphlet has been prepared for the use of army convalescent services, information and educational officers and organizations interested in acquiring greater knowledge of the medical, personal, social, vocational, economic, and educational problems of army air force veterans and in methods of helping the veteran to meet these problems. Basic

principles found effective both in the armed force and in existing community programs are presented, rather than "rules" since both veterans and communities are individual. Available from the Convalescent Services Division, Office of the Air Surgeon, Headquarters, Army Air Forces, Washington 25, D. C.

*The Soldier Takes a Wife*—Humorously illustrated and colloquially written, particularly for service men and returning veterans, this little pamphlet charts the "minefields" of a hasty marriage as well as the "clover patch" of a planned one, including proper planning for children. "When you know you've found companionship—its time to think of marriage—not any sooner," "she may be good at jive but a sad sack at the skillet," and "the health of a family can be guarded and promoted if each child is consciously planned rather than just born," are among its admonitions.

This pamphlet was prepared at the request of service medical officers and chaplains and has already been translated into Braille for the benefit of Navy blinded. It is available from Planned Parenthood Federation of America, Inc., 501 Madison Avenue, New York 22, N. Y.

*Ten Years of Service for Children under the Social Security Program, August, 1935—August, 1945*—This is a summary of the work done in extending health services for mothers and children

through Social Security. In three parts it covers maternal and child health, services for crippled children, and child welfare services, all of which are administered by state and local agencies, with federal financial assistance, under plans approved by the Children's Bureau. During approximately the period of the program the infant mortality rate has decreased nearly one-third, the maternal mortality rate more than one-half. Although 100,000 crippled children received care under the program, it is estimated that fewer than 10 per cent of the nation's physically handicapped children have been brought under care. As to child welfare services, only a beginning has been made in providing child welfare workers to cover every state. Available without charge from the Children's Bureau, U. S. Department of Labor, Washington, D. C.

A revision of the leaflet, *Posture, Guide for Public Health Nurses No. 5*, of the Family Health Series, published by the Department of Educational Nursing, Community Service Society, New York City, has just appeared and is well worth acquiring. Its simplicity makes it useful to parents, teachers, high school and college students, as well as doctors and nurses. It is especially planned for teachers. The price of *Posture* is 10 cents plus postage for orders of 1 to 100, 8 cents plus postage for orders of over 100. Address Community Service Society, 105 East 22nd Street, New York 10, N. Y.



## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

Health Practice Indices, 1943-1944—Prepared by the Subcommittee on State and Local Health Administrators of the Committee on Administrative Practice of the American Public Health Association. (3rd ed.) New York: A.P.H.A., 1945. 87 pp. Free from publisher.

This is the third edition of a booklet containing a collection of charts which show the range of accomplishments in various fields of community health services for 243 communities in 32 states and 4 Provinces of Canada, as determined from *Evaluation Schedules* submitted by these health departments in 1943 and 1944.

The third edition of this publication represents a marked improvement over the first two editions. The numbering of the lines in the charts, in conjunction with a reference table which was introduced for the first time in this edition, enables one to determine readily the standing of his health department in relation to other departments submitting schedules. The marginal notes which accompany each chart are informative and succinct.

This booklet will prove of interest to all public health workers, since it presents an opportunity to study the performance of a number of health departments from a wide geographic area. The publication will prove of special interest to local health officers, who will find these charts, in conjunction with the *Evaluation Schedule*, to be helpful as a guide to good public health practice. In like manner, directors of the divisions of local health services and directors of

divisions of specialized services in state health departments will find these charts to be useful as a basis for consultation services.

As local health departments in increasing numbers submit *Evaluation Schedules*, the charts will become increasingly meaningful.

RICHARD F. BOYD

Paths to Better Schools. *Twenty-third Yearbook of the American Association of School Administrators.* Washington: National Education Association, 1945, 415 pp. Price, \$2.00.

The improvement of professional efforts, always desired by the leaders in any field, is achieved by careful study and redefinition of goals, by intelligent utilization of new methods, and by the adaptation of procedures to changing social and economic conditions. *Paths to Better Schools*, prepared by an outstanding group of educators composing the 1945 Year Book Commission of the American Association of School Administrators, presents constructive suggestions for improving school programs, facilitating pupil learning, and modernizing the financing of public education. As stated in its foreword, "Paths to Better Schools . . . sets no final lists of goals, no infallible collection of procedures, no guarantee of success. Much of the content will not be new to those who have made the greatest strides in educational development. It should help many laymen and educators, however, to see more clearly 'what was already there, perhaps, but dim.'"

Despite the commission's modesty, as revealed in the foregoing statement, all who are interested and concerned with public education in the United States, and that should include every adult, will find *Paths to Better Schools* interesting reading and will find the viewpoints and suggestions stimulating and provocative.

Three chapters relate to school programs, one each to Physical Fitness, Preparing Youth for Occupational Efficiency, and Citizenship. The chapter on Physical Fitness, of particular interest to those concerned with health and health education, points out some of the weaknesses of programs of health service, health education, and physical education, and suggests ways by which better programs may be attained. Two particularly significant statements are: "The foundation of physical fitness is laid down in the formative period of the child's life. This means maximum protection from disease and handicaps, a joyous childhood, wholesome health habits, and a vigorous out-of-door play life." and "The great weakness in the school health service has been the failure to develop methods of preventing and correcting defects which are reported in the same frequency year after year."

For those engaged in health education, the chapter on "Better Ways of Learning" provides an excellent summary of present-day viewpoints on teaching methods. Attention is given to "(a) finding and meeting the needs of the individual, (b) democratic tendency, (c) learning by doing, (d) evaluation, (e) increased use of audiovisual aids, (f) teaching related to life situations, and (g) broader objectives through experimental teaching."

Although the parts of *Paths to Better Schools* to which reference has just been made contain information and viewpoints of special interest to those concerned with school health programs,

other sections, dealing with methods of financing school programs and of equalizing educational opportunities, should be read by all who wish to develop intelligent opinions regarding federal aid to education and the inter-relationship of federal, state, and local education authorities.

CHARLES C. WILSON

**Rorschach's Test, II. A Variety of Personality Pictures—***By Samuel J. Beck, Ph.D. New York: Grune & Stratton, 1945. 402 pp. Price, \$5.00.*

In this companion volume to *Rorschach's Test I, Basic Processes* (reviewed, *A.J.P.H.*, September, 1944, p. 995), Dr. Beck has carried his exposition of the test into the realm of interpretation. Part I of the present volume is concerned with an explanation of the psychological significance of the various categories, or test factors, into which the responses of a subject to the Rorschach ink blots are classified. In Part II, analyses of the records of a group of persons representative of various intellectual and developmental levels, and a group of schizophrenic and neurotic subjects are presented.

Impressive as are the personality portraits which the author gives, even more impressive are the clinical insights which have revealed the significance underlying test responses. The discovery, for example, that a "good" form response shows an individual's ability "to direct his thinking from his higher centers, i.e., with conscious attention and discriminating judgment," the penetration into the meaning of movement responses, of color responses, and the like, are remarkable achievements. Although the necessity for constant revaluation and validation of the interpretations cannot be too strongly urged, the unique contribution of the test to clinical diagnosis is evident. Despite the book's highly technical nature, lay persons whose interests at

some point touch those of Rorschach clinicians will not fail to find it an absorbing work.

LILLIAN DICK LONG

**Virus as Organism**—By *Frank MacFarlane Burnet, M.D.* Cambridge, Mass.: Harvard University Press, 1945. 134 pp. Price, \$2.00.

"... as far as the doctor, the public health administrator, and the biological experimenter are concerned, the pragmatic necessity will remain that virus be regarded as organism—self-reproducing, varying, and surviving like any other living being." With this concept the author progresses to a consideration of the behavior and characteristics of viruses in the dynamic, evolutionary and genetic sense. Variation in a virus is considered to be selection of mutating forms, and survival is considered in the broad terms of parasitism. These ideas are carried forward into a discussion of the evolution and changes in virus diseases as a problem in natural history; it is in these sections that the book is most stimulating in seeking to interpret the history of a virus disease in terms of the agent's behavior in the host. For instance, herpes simplex and psittacosis probably represent old diseases in which the virus has reached evolutionary stability with the host; poliomyelitis is presented as a disease in the process of evolution. The discussions of influenza, smallpox and yellow fever seek also to view the broad problems presented by the respective diseases.

The book is provocative, since the author has frankly permitted himself the privilege of indulging freely in theory; for this reason the reader must guard against factual acceptance of all the ideas expressed. It serves, however, an important function in seeking to concentrate attention upon the broad concepts of epidemic disease in terms of the agent involved rather than in minutiae which at present are difficult

to interpret. It is highly recommended reading. THOMAS FRANCIS, JR.

**Manual for Coding Causes of Illness According to a Diagnosis Code for Tabulating Morbidity Statistics**—*Division of Public Health Methods, U.S.P.H.S., Misc. Publication No. 32.* Washington: U. S. Govt. Ptg. Office, 1944. 489 pp.

Here we have in as nearly perfect technical and textual form as possible what all hopeful devotees of systematic morbidity reporting and publication have awaited these many years. Since Bolduan's first public declaration of the need, potential usefulness, and practical methodology of morbidity reporting by medical institutions in 1913, down through the *Standard Classified Nomenclature of Disease*, 1938 and 1942, and the *Hospital Discharge Study of New York* by Neva Deardorff, 1933, et seq., the essential technology for coding according to a diagnosis code for tabulating morbidity statistics has been lacking, and if offered has been neither officially nor unofficially acceptable. We have the distilled essence of the whole matter admirably presented in this volume of 489 pages.

An introduction of 25 pages gives all the necessary textual description for any competent reporting or registration office. The next 25 pages gives us a morbidity code with corresponding numbers of the *International List of Causes of Death*.

From pages 51 to 126, we have a classified listing of morbidity categories with representative inclusions.

Pages 127-461 give us an alphabetical index to the morbidity code.

Pages 462-489 are devoted to three useful appendices.

If there is anything essential missing, the reviewer has not discovered the omission. This is the most important step so far made in our country toward responsible uniform comparable mor-

bidity data. The position of the United States at the next (1948) International Conference on Certified Causes of Death and Diseases will be one of greater distinction and influence because of the appearance of this highly creditable product of effective collaboration between the U.S.P.H.S. and the Bureau of the Census.

HAVEN EMERSON

#### Government in Public Health—

*By Harry S. Mustard. New York: The Commonwealth Fund, 1945. 219 pp. Price, \$1.50.*

This monograph is one in the series published for the Committee on Medicine and the Changing Order of the New York Academy of Medicine. Dr. Mustard first analyzes the conditions and problems of public health work in general. Against this background, he surveys the history, current practice, and future opportunities of government health administration on the federal, state, and local levels. The historical approach enables the reader to view the present situation as one of transition between the past and the probable future. Within this framework the study emphasizes the social and political, rather than the technical aspects of the subject.

Dr. Mustard faces squarely the trend toward increasing federal control through the Public Health Service. But the failure to combine all major national administration in the Service, with various unfortunate implications, is also carefully described.

It is recognized that the bulk of actual health service must be rendered by local departments. The fact that many communities still lack full-time

health service is viewed as the most immediate need in the entire field. The author believes that mandatory laws should be adopted in the states, requiring that approved districts set up departments employing full-time health officers. The poorer districts will require state or federal assistance, and the growing importance of the state department as an intermediary here between federal and local agencies is fully recognized.

The study is both comprehensive and critical. The reader sees the overall picture, senses progress, but is quite conscious of serious inadequacies and of improvements that are indicated. The style is admirably clear and incisive. One could hardly ask, within brief compass, for a more informative and thought-provoking account of this increasingly important aspect of modern medicine.

RICHARD H. SHRYOCK

*American Red Cross First Aid Textbook (rev. ed.)—Philadelphia: Blakiston, 1945. 254 pp. Price, Cloth, \$1.00; Paper, \$.60.*

The revised edition of the well known *First Aid Textbook* of the American Red Cross presents a complete re-writing of previous editions, and has been greatly improved and enriched by contributions from leading surgeons, first aid instructors and research workers. It is profusely and well illustrated. With the rate of home, farm, and highway accidents mounting, and the last-named group a special menace, this textbook is a welcome and necessary tool in the hands of doctors, nurses, and the students in first aid classes. Would we had had it in 1941!

DOROTHY DEMING

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**And We Were Lucky!**—Though our combat losses (325,000) in World War II exceed battle deaths in all previous conflicts, including both sides in the Civil War, our European allies suffered far greater casualties, and the enemy endured a still more huge death toll, mounting into the millions.

ANON. American Combat Losses in World War II. Stat. Bull. (Met. Life Ins. Co.). 26, 11:1 (Nov.), 1945.

**National Health Bill—Current Model**—If you are one of the "socialistic element in the American Public Health Association," you may wish to see that for which you are held, in part, responsible by a spokesman of the opponents of compulsory prepaid medical care. You will find here a clear analysis of the latest version of the Wagner-Murray-Dingle Bill. In the same issue of the Journal is an up-to-date statement of the Medical Association's position in the matter of medical care, and the editorial from which came the words in quotes above.

ANON. The National Health Act of 1945. J.A.M.A. 129, 14:963 (Dec. 1), 1945.

**When German Measles Is Decidedly Dangerous**—If mothers contract rubella during the first three months of pregnancy, congenital defects frequently develop in the fetus. Commonest lesions are cataracts, cardiac defects, deafness, and microcephaly.

ALBAUGH, C. H. Congenital Anomalies Following Maternal Rubella in Early Weeks of Pregnancy. J.A.M.A. 129, 11:719 (Nov. 10), 1945.

**How Times Have Changed Department**—"Furthermore, they (the

mothers) were instructed to adjust the feeding schedule to the rhythm indicated by each individual baby, rather than to maintain a strictly prearranged regimen. Even when the cause of crying was not evident . . . (they were told to) pick up the baby and try a little fondling. The soothing use of rocking chairs and lullabies was suggested."

ALDRICH, C. A., et al. The Crying of Newly Born Babies. J. Pediat. 27, 5:428 (Nov.), 1945.

**Health Educator's Functions**—You will find here an answer to the objection: "If almost all health work is educational and all health workers should be educators, why do we need a health educator?" Also there is a statement about what is being done to create a supply of these supernumeraries.

DERRYBERRY, M. Health Education in the Public Health Program. Pub. Health Rep. 60, 47:1394 (Nov. 23), 1945.

**The Older the Sicker**—Though the number of absences for both sexes decreased with advancing ages, the duration increased, resulting in an upward trend with age in days lost. You'll find a lot of useful statistics in this recording of Boston Edison experience.

GAFATER, W. M., and SITGREAVES, R. The Age Factor in Disabling Morbidity 1940-1944. Pub. Health Rep. 60, 49:1447 (Dec. 7), 1945.

**In-Service Training by Participation**—The "workshop" epidemic hits health administration—with a happy outcome, apparently. Six committees decide what is to go into this particular venture in staff education.

GARDNER, B. C. Staff Workshop Gets Results. *Pub. Health Nurs.* 37, 11:573 (Nov.), 1945.

**It Helps Erupted Teeth, Too—**Not often do we have a really controlled human demonstration. But here, two groups of Japanese were relocated—and forced to stay where put. One group was sent to a place with a fluorine-free water supply. The other to a place with water having 3 p.p.m. of fluorine. The teeth of boys and girls sent to each place were examined and two years later reexamined. The incidence of new caries developing in the fluorine group was about half that of the control.

KLEIN, H. Dental Caries Experience in Relocated Children Exposed to Water Containing Fluorine. *Pub. Health Rep.* 60, 49: 1462 (Dec. 7), 1945.

**Breast vs. Bottle Again—**Is mother's milk really better than cow's milk for babies? This question is answered in an impressive series of papers on vitamin, mineral, and trace element contents of both varieties of milk, metabolic studies of mothers, and growth and skeletal maturation of infants. When the series is complete the findings in favor of the breast will be irrefutable, but the bottle will still win the battle.

MACY, I. G., *et al.* Human Milk Studies (and eight related papers). *Am. J. Dis. Child.* 70, 3:135 (Sept.), 1945.

**Preventive and Curative Nursing**—Today nurses occupy more than half the technical positions on health department staffs: there are more than 20,000 of them, with 3,500 vacancies. What about the future? There will be less need for certain kinds of nursing—in the care of communicable diseases—but a great deal more work in mental and chronic diseases. Other changes are in store.

MOUNTIN, J. W. The Future of Public

Health Nursing. *Pub. Health Nurs.* 37, 11: 542 (Nov.), 1945.

**ANTU—**A new rat poison, which seems to be specific for Norway rats, is now available for use by sanitary officers. Its emetic properties make it safe for dogs (in most cases).

RICHTER, C. P. The Development and Use of Alpha-Naphthyl Thiourea (ANTU) as a Rat Poison. *J.A.M.A.* 129, 14:927 (Dec. 1), 1945.

**Generously Adequate Diets for Children—**Children will consume the basic foods in generous amounts if they are given the chance, and they will grow much better than if kept on a diet as deficient in these essentials as most institutional fare is, and a good many home-served meals are. As Bernard Shaw would say, "I could have told them that and saved them the trouble," but someone, I suppose, should demonstrate the probable. At any rate, the children enjoyed a year of good eating.

ROBERTS, L. J., *et al.* Results of Providing a Liberally Adequate Diet to Children in an Institution. *J. Pediat.* 27, 5:393 (Nov.), 1945.

**Hopeful Note—**A tardy outbreak of influenza which involved a considerable number of individuals in unvaccinated wards, but did not occur in vaccinated wards, suggests that immunity produced by vaccination may persist at least one year.

SALK, J. E., *et al.* Immunization Against Influenza with Observations During an Epidemic of Influenza A One Year After Vaccination. *Am. J. Hyg.* 42, 3:307 (Nov.), 1945.

**Flight in Pure Speculation—**A British M. O. H. takes a broad look at public health and asserts that we are now on the threshold of a third phase. The initial or sanitation era was followed by an epidemiologic attack upon specific diseases coupled with maternity and infant hygiene. Our new aim is

the prevention of deviations from health from whatever cause. As engineering gave way to epidemiology, so the latter will bow to sociology as the "curly haired boy" of public health administration, the essayist implies.

SAVAGE, W. Public Health and Its Debt to Experimental Medical Research. M. Officer. 74, 20:161 (Nov. 17), 1945.

**Out on a Crowded Limb**—First concerns of men and women who work is a job and security, but an increasing number of labor-management contracts include health insurance, which is a sign, asserts this writer, that labor has some concern about health protection, too. He predicts that labor will con-

tinue to support down-to-earth programs against V.D.

SHOSTAC, P. Notes on Industrial Cooperation. J. Social Hyg. 31, 7:481 (Oct.), 1945.

**Out of This War**—Our Spanish war shocked us into the control of typhoid, the first World War drove us to attempt to stamp out syphilis. The recent conflict challenges us to do as much against mental disease. An aging population, too, will change directions of public health from communicable disease and infant hygiene to chronic conditions.

WINSLOW, C.-E. A. Postwar Trends in Public Health and Nursing. Am. J. Nurs. 45, 12:989 (Dec.), 1945.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed in future issues.*

**ANATOMY AND PHYSIOLOGY.** By Frederic Theodore Jung, M.D., and Elizabeth Carpenter Earle, R.N. 3rd ed. Philadelphia: Davis, 1945. 829 pp. 338 illus. Price, \$4.00.

**CLEVELAND MARKET DATA HANDBOOK.** By Howard Whipple Green. Cleveland: Real Property Inventory of Metropolitan Cleveland, 1945. 69 pp. Price, \$2.50.

**THE EFFECT OF BOMBING ON HEALTH AND MEDICAL CARE IN GERMANY.** By the Morale Division, United States Strategic Bombing Survey. Medical Branch Report. Washington, D. C.: War Department, 1945. 388 pp.

**A FUTURE FOR PREVENTIVE MEDICINE.** By Edward J. Stieglitz, M.D. New York: Commonwealth Fund, 1945. 77 pp. Price, \$1.00.

**HOUSE NO. 2000.** Report of the Special Commission to Investigate the Problem of Drunkenness in Massachusetts, 1945. 381 pp. Free from Mr. Frederick Cook, State Secretary, State House, Boston, Mass.

**HYGIE CONTRE VENUS.** Guerre a la Syphilis! By Adrien Plouffe. 2nd ed. Montreal: Les Editions Lumen, 1945. 221 pp.

**MANUAL FOR CODING CAUSES OF ILLNESS ACCORDING TO A DIAGNOSIS CODE FOR TABULATING MORBIDITY STATISTICS.** By the Division of Public Health Methods, U. S. Public Health Service. Washington, D. C.: Government Printing Office, 1944. Miscellaneous Publication No. 32. 489 pp.

**MANUAL OF DIAGNOSIS AND MANAGEMENT OF PERIPHERAL NERVE INJURIES.** By Robert A. Groff, M.D., and Sara Jane Houtz, B.S. Philadelphia: Lippincott, 1945. 188 pp. 111 illus. Price, \$8.00.

**MEN WITHOUT GUNS.** By DeWitt Mackenzie. Philadelphia: Blakiston, 1945. 152 pp. 177 illus. Price, \$5.00.

**THE PLACE OF THE FAMILY IN AMERICAN LIFE.** Prepared by the Committee of Consultants on Family Life. New York: Woman's Foundation, 1945. 16 pp.

**SCIENCE AND SCIENTISTS IN THE NETHERLANDS INDIES.** Edited by Pieter Honig, Ph.D., and Frans Verdoorn, Ph.D. New York: Board for the Netherlands Indies; New York: G. E. Stechert, 1945. 491 pp. Price, \$4.00.

**A STATEMENT OF THE HEALTH NEEDS OF SCHOOL-AGE CHILDREN AND RECOMMENDATIONS FOR IMPLEMENTATION.** Washington, D. C.: U. S. Office of Education, 1945. 22 pp.

**STREAM POLLUTION IN TENNESSEE.** Report on a Study of Pollution of Streams and Other Surface Waters in the State and Programs of Control. By the Stream Pollution Study Board. Nashville: Stream Pollution Study Board, 1945. 156 pp.

**SURGICAL NURSING.** By Robert K. Felter, M.D., and Frances West, R.N. 4th ed. Philadelphia: Davis, 1946. 589 pp. 252 illus. Price, \$3.50.

## ASSOCIATION NEWS

### VOCATIONAL COUNSELING AND PLACEMENT SERVICE—A PROGRESS REPORT

Active contact with employers, candidates, and those seeking counsel has greatly increased recently in the American Public Health Association Vocational Counseling and Placement Service. Within the last month, before this goes to press, the Vocational Counseling and Placement Service has received and answered approximately 200 letters; office interviews average two to four daily. The Association operates this Service under a coöperative plan and with the assistance of the U. S. Public Health Service.

The Placement Service files list employment opportunities and available personnel in all spheres of public health

(public health nurses are referred to special agencies). On December 31, it listed 146 openings offered by 62 employers, as well as 82 candidates for positions. These numbers promise to increase considerably during the month of January, 1946.

The more openings and available candidates are known to this Service, the better the "clearing house" will function. Efforts are being continued to locate openings and applicants through all available channels. Readers of the *Journal* are invited to notify the Association promptly of existing openings, giving all necessary particulars.

### APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

#### *Health Officers Section*

Earl B. Miller, M.D., 111 Dean St., Woodstock, Ill., District Health Supt.

John R. Turner, M.D., 815 N. High St., Uvalde, Tex., Director, Southwestern Texas Health Unit

#### *Laboratory Section*

Arthur R. Cade, Ph.D., P. O. Box 224, Rutherford, N. J., Bacteriologist, Givaudan-Delawanna, Inc.

Joy B. Cross, Ph.D., University of Tex., Medical Branch, Galveston, Tex., Research Assoc., Dept. of Preventive Medicine and Public Health

Philip Grossman, 1000 East Fern Ave., Garvey, Calif., Research Asst., Univ. of Southern California

Harold Macy, Ph.D., University of Minnesota, University Farm, St. Paul 8, Minn., Prof. of Dairy Bacteriology

Bernice Messerschmidt, City Hall, LaCrosse, Wis., Supervisor, State Coöperative Laboratory, State Board of Health

Robert I. Modica, M.S., 1535 Oakmount Rd.,

South Euclid 21, Ohio, Bacteriologist and Serologist (recently in Service)

Charles R. Smiley, 503 Doctors Bldg., Nashville 3, Tenn., Asst. Bacteriologist, Physicians Laboratories

Dorothy T. Wilson, 335 Tioga St., Trenton 9, N. J., Chemist, Industrial Research Dept., National Oil Products Co.

Ernest J. Witte, V.M.D., 350 Lafayette St., New York 12, N. Y., Student, Columbia Univ., DeLamar School of Public Health

#### *Vital Statistics Section*

Nancy H. Ampel, 138 E. 35th St., Brooklyn 3, N. Y., Junior Statistician, New York City Dept. of Health

LaVina Harrison, 4422 Third Ave., New York 57, N. Y., Medical Records Librarian, Home for Incurables

Pearl Josephson, 49 W. 96th St., New York, N. Y., Statistician, New York City Dept. of Health

Margaret S. Wright, P. O. Box 1222, Honolulu, Hawaii, Administrative Procedures Analyst, Board of Health, Territory of Hawaii



*Engineering Section*

- Burk Chester, Tavares, Fla., Senior Sanitary Officer, Lake County Health Dept.  
 Lt. Col. Edward S. Hopkins, Sn.C., 4402 Roland Ave., Baltimore, Md., Chief, Sanitary Engineering Section, Third Service Command  
 Maynard L. May, Box 177, Boca Raton, Fla., Operations Engineer, Sanitary Section, Boca Raton Army Air Field  
 Perry McK. Teeple, 2321 Belote Place, Jacksonville 7, Fla., Sanitary Engineer, State Board of Health

*Industrial Hygiene Section*

- John J. Lareau, Dept. of Labor, LaPaz, Bolivia, S. A., Safety Engineer, Accident Prevention Section, Bolivian Government

*Food and Nutrition Section*

- Marjorie G. Abel, M.S., 444 E. Pau St., Honolulu 37, Hawaii, Consultant Nutritionist, Board of Health  
 Rheta B. Hyatt, 925 Main St., Bridgeport, Conn., Director, Community Nutrition Service  
 Edna Mae McIntosh, M.S., Gerber Products Co., Fremont, Mich., Nutritionist

*Maternal and Child Health Section*

- Grace E. Malone, 332 New St., Newark 4, N. J., Senior Medical Social Worker, Newark Dept. of Health  
 Leon Sternfeld, M.D., 74 State St., Albany, N. Y., Chief, Bureau of Medical Rehabilitation, State Dept. of Health

*Public Health Education Section*

- Ruth D. Ackland, 3741 Lurline Drive, Honolulu 17, Hawaii, Acting Director of Public Health Education, Territory of Hawaii Dept. of Health  
 Lucy S. Dade, Vanderbilt Univ., Mary Kirkland Hall, Nashville, Tenn., Asst. Prof. of Nursing Education, School of Nursing  
 Davida M. Finney, American Mission, Cairo, Egypt, Missionary  
 Leah C. Furtmuller, 511 W. 235th St., New York 63, N. Y., Secy., Committee on Visiting Housekeeper Services, Welfare Council of New York City  
 Sgt. Robert A. Gegere, 227 General Hospital, APO 772, Postmaster, New York, N. Y., Venereal Disease Clinic Asst.  
 Janie Herndon, M.S.P.H., County Health Dept., Spartanburg, S. C., Health Educator  
 Mary Margaret Jones, M.S., 17 Ford Ave., Oneonta, N. Y., Exec. Secy., Otsego County Tuberculosis and Public Health Assn.  
 Barbara L. Kahn, M.P.H., City Health Dept.,

- Public Safety Bldg., Seattle 4, Wash., Director of Public Health Education  
 Aubrey Mallach, M.S., 519 Smithfield St., Pittsburgh, Pa., Secy., Health Division, Federation of Social Agencies  
 Carmel A. McKay, P. O. Box 1067, Vallejo, Calif., Exec. Secy., Solano County Tuberculosis Assn.  
 Gladys M. Morrison, 32 Tucker Ave., Liguanea, Jamaica, B.W.I., Health Education Officer, Government of Jamaica  
 Myron Weaver, M.D., 5233 3rd Ave., S., Minneapolis, Minn., Asst. Prof. of Preventive Medicine and Public Health, Univ. of Minnesota  
 Sophie P. Williams, M.A., 600 West 168th St., New York, N. Y., Exec. Secy., Washington Heights-Riverside District Health Committee  
 Robert O. Yoho, M.A., 3630 W. 32nd St., Indianapolis, Ind., Director, Health Education Division, State Board of Health

*Public Health Nursing Section*

- Grace H. Cole, R.N., P. O. Box 158, Sanford, Fla., Public Health Nurse, Seminole County Health Unit  
 Thelma Foster, 2002 Castleman Drive, Nashville, Tenn., Director, Nursing Activities, Nashville-Davidson County Chapter A.R.C.  
 Lt. Mary E. O'Connor, 411 W. 116th St., Johnson Hall, New York 27, N. Y., Student, Columbia University, DeLamar Institute of Public Health  
 Elizabeth R. Vickers, R.N., 131 E. Arch St., Marquette, Mich., Pediatric Consultant, Michigan Crippled Childrens Committee  
 Gladys J. Wilson, R.N., 9 Pine St., New Haven, Conn., Supervisor, Nursing Bureau, New Haven Dept. of Health  
 Pauline Yahnolnitsky, Peace River Health Unit, Pouce Coupe, B. C., Canada, Supervisor

*Epidemiology Section*

- Thomas G. DiBrizzi, M.D., 88 Garfield, Brooklyn 15, N. Y., Physician  
 Daniel H. Fillmore, 7237 Summerdale Ave., Chicago 31, Ill., P.A. Sanitarian (R), U.S.P.H.S.; Director, Statistical Section, Chicago Venereal Disease Control Program  
 Antonio Galvez Gomez, M.D., Escobar 570 (Bajos), Habana, Cuba, Jefe del Negociado de Desinfeccion y Presidente de la Comision de Clausuras de la Jefatura Local de Salubridad de La Habana  
 Harris W. Hantman, D.V.M., 56 Norwood Av., Brooklyn, N. Y., Veterinarian  
 Vicente Lago Pereda, M.D., Calle C 309, entre Fuentes y Lanuza, Reparto Almendares,

Marianao, Cuba, Jefe Local de Salubridad de La Habana  
 Candido de Oliveira e Silva, M.D., Rua Barroso 227 N., Teresina-Pi, Brazil, S. A., Chief of Service of Control of Leprosy, Dept. of Health  
 Emilio Soudy Castro, M.D., Hospital San Camilo, San Felipe, Chile, S. A., Asst. to Jefatura Sanitaria Provincial of the Province of Aconcagua  
 William C. Spring, Jr., M.D., 2A Notre Dame St., Glens Falls, N. Y., Apprentice Epidemiologist, State Dept. of Health

#### *School Health Section\**

Thelma S. Cline, R.N., 811 South Euclid Ave., Oak Park, Ill., Asst. Supervisor, Cook County Public Health Unit  
 Marjorie McGrath, 207 Kingston Court, LaCrosse, Wis., Director of Student Health, State Teachers College  
 Nathan E. Rudd, 440 Lenox Rd., Brooklyn 3, N. Y., District Health Education Counselor, Board of Education

#### *Dental Health Section*

Stephen P. Mallett, D.M.D., 358 Commonwealth Ave., Boston, Mass., Oral Surgeon, Boston City Hospital  
 Zachary M. Stadt, D.M.D., 333 E. 17th St., New York 3, N. Y., Dentist  
 Laurence E. Totten, D.M.D., 600 W. 168th St., New York, N. Y., Student, Columbia University, DeLamar Institute of Public Health

#### *Unaffiliated*

Flora B. Chisholm, M.A., 413 W. 148th St., New York, N. Y., Health Secretary, National Health Program  
 V. Vembu Iyer, 13 Gordhan Niwas, Matunga, Bombay 19, India, Interested citizen  
 Stephen C. Newitt, 7504 St. Charles Ave., New Orleans, La., Director, Division of Administrative Services, State Dept. of Health  
 Morris Shiffman, D.V.M., M.P.H., 1416 Walton Ave., New York, N. Y., Quality Control Director, General Ice Cream Corp.  
 Edgar G. Smeltzer, Jr., M.A., 87 Meadowbrook Rd., Hempstead, N. Y., Field Secy., Nassau County Tuberculosis and Public Health Assn.

#### DECEASED MEMBERS

Mrs. Ernestine Consigny, San Francisco, Calif., Elected Member 1931, Public Health Nursing Section  
 William R. Martin, M.D., Charlotte County, Va., Elected Member 1943, Health Officers Section  
 Horace Newhart, M.D., Minneapolis, Minn., Elected Member 1930, Maternal and Child Health Section  
 Maurice H. Rees, Ph.D., M.D., Denver, Colo., Elected Member 1938, Public Health Education Section  
 Sister Zoe Schieswohl, R.N., Carville, La., Elected Member 1937, Public Health Nursing Section

## EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing Officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

### POSITIONS AVAILABLE

(Supplemental to list in January Journal)

**Sanitary Engineer Wanted, City of Dallas,** to be associated with public health department. Salary range \$171-\$270, starting salary depending on experience. Permanent position under civil service with participation in retirement plan. Make application to Civil Service Board, 309 City Hall, Dallas 1, Texas.

**Wanted: Bacteriologist with B.S. or B.A. degree and 1 year training in public health bacteriology and serology to work in State Public Health Laboratory.** Salary \$1,800 to \$2,280. Apply State Department of Health, Box 1877, Richmond, Va.

**Territorial Department of Health—Juneau, Alaska—**wants public health staff nurses. Minimum salary \$245 South-eastern, \$281.75 Interior. Minimum qualifications necessary: year of public health in school of nursing approved by N.O.P.H.N. and two years' experience, one under qualified supervision, preferably in V.N.A. or rural public health. Vacation one month, 14 days sick leave, 38 hour week. Apply directly to Director, Division of Public Health Nursing, Box 1931, Juneau, Alaska.

**Sanitarians wanted:** Salary range \$265-\$300 month. Possibility of advancement to higher classification. Minimum requirements 2 years' college work with courses in the sciences related to public health or approximately equivalent experience in field of environmental sanitation. Three months' course in public health is obligatory. Write Alaska Merit System, Box 201, Juneau, Alaska.

**Health Education Consultant wanted:** Salary \$300-\$345 month. Minimum requirements college degree and 1 year graduate work in public health. Experience: 1 year full-time paid employment in any of the fields of public health education. Write Alaska Merit System, Box 201, Juneau, Alaska.

**Positions Available in Delaware:** 2 County Health Officers, Director Tuberculosis Control, Director Venereal Dis-

ease Control, Physical Therapist, Occupational Therapist, Medical Social Worker. Experience and advanced training in public health essential in medical positions. For information write to Dr. Edwin Cameron, State Health Officer, Dover, Del.

**Wanted: Medical Director, Municipal Tuberculosis Hospital,** bed capacity 115. One with knowledge of surgery preferred. Permanent, full-time. Salary \$4,200 with full maintenance. Apply Box 583, Fall River, Mass.

**Wanted: Medical officers needed for several openings in California,** physicians to direct maternal and child health programs or venereal disease control work, and to assist local health officers. Requires license to practise in California. Salary \$4,800 year. Also opening for District Maternal and Child Health Medical Officer with training in pediatrics or obstetrics and public health. License to practise in California required. Salary \$4,800 year. Apply to State Department of Public Health, Room 612, Phelan Building, 760 Market Street, San Francisco 2, Calif.

**Wanted: Physician trained in tuberculosis to assume permanent control of Tuberculosis Division of Health Department of Eastern city of 185,000.** Applicant please state salary expected. Apply Box H, A.P.H.A.

**Wanted: In City of Hartford, Conn., physician trained in venereal diseases to assume permanent administrative control of Venereal Diseases Division of the Health Department.** Applicant please state salary expected. Apply Dept. of Health, Hartford, Conn.

**Wanted: Health Educator.** Entrance salary \$3,240. Top salary \$3,780 per annum; Epidemiologist and Registrar of Vital Statistics, M.D. with experience in epidemiology, entrance salary \$4,500, top salary \$5,000, plus, per annum; Staff Physician for health districts, qualification M.D., entrance salary \$3,158, top salary

\$3,879 per annum. Apply Commissioner of Health, City Hall, Cincinnati 2, Ohio.

**Wanted:** Executive Secretary for Hawaii Territorial Society for Mental Hygiene. New position. Salary \$350 month, advancement dependent on growth of Society and its work. Duties to guide, stimulate, and promote development of integrated program for the Society, now 3 years old. Major activities, education, coordination, publicity. Requirements, training and experience in psychiatric social work with demonstrated ability in public relations preferred.

Will also consider candidates with training and successful experience in community organization. Selection to be made on basis of unassembled examination, including submission of short thesis on pertinent subject. For particulars write to the Society, clipper mail, attention Miss Vivian Johnson, Mabel Smythe Bldg., Honolulu, T. H.

**Physical Therapy Technician** for New Hampshire Department of Public Health. Apply to Merit System Council, State House, Concord, N. H.

### POSITIONS WANTED

**Senior Bacteriologist**, 11 years' experience, 4½ years as U. S. Army laboratory officer with experience in dysentery and malaria and practical work in war bacteriology, tropical diseases, etc., seeks position anywhere in the U. S. L-480

**Bacteriologist**, woman, B.S. 1941, 5½ years' laboratory experience, hospital and public health, seeks position in or near New York City. Prefer desk position such as technical literature research, abstracting, etc. Also interested in laboratory work. L-481

**Statistician and registrar** of vital statistics for past four years in large city wishes to make a change. S-461

**Veterinarian** with 3 years' experience in army meat and milk inspection seeks position with city or state health department.

Well qualified in animal disease control. M-461

**Graduate veterinarian**, age 30, V.M.D. University of Pennsylvania, seeks position with city or state health department. Over 3 years' experience in army meat and dairy inspection including plant sanitary inspection. Over 6 years' experience in animal diseases and veterinary pathology. M-462

**Sanitary Engineer**, 5½ years' operational experience city sewage plant, nearly 4 years Captain in Sanitary Corps, U. S. Army, seeks position as sanitary engineer in Eastern U. S. E-488

**Bacteriologist**: M.A., Johns Hopkins, seeks position in Medical College or State Public Health Laboratory. Broad experience. L-482

### EMPLOYMENT AND PLACEMENT SERVICE

The American Public Health Association announces an expansion of the Employment Service which has become a Counseling and Placement Service for public health workers and employers. This project which is primarily for the service of veterans has been made possible through the cooperation of the United States Public Health Service.

Counseling and guidance services for the various public health specialties are available to candidates through well trained staff consultants. Besides this function the Counseling and Placement Service establishes lines of contact between employers and candidates. It thus serves as a clearing house without recommending or sponsoring candidates or positions.

The facilities of the employment page are open to members free of charge.

### Advertisement

## Opportunities Available

WANTED—(a) Health officer for county having population of 75,000; headquarters in town of 40,000; year of postgraduate study in recognized school of public health or its equivalent required; \$4,000–\$5,000 including traveling expenses. (b) Consultant in obstetrics and, also, consultant in pediatrics, to join division of maternal and child health; considerable traveling; headquarters in university medical center. (c) Dentist to develop dental program; dental trailer now being furnished; pioneer project in area where no dentist practices; population without dental service about 9,000. (d) Woman physician to succeed director of student health department in young women's college; enrollment approximately 1,300 students; 200 faculty; medical staff comprised of four full-time physicians and consultant psychiatrist; modern infirmary with well equipped x-ray and laboratory department; faculty appointment with full voting privilege. (e) Public health director; duties consist of general supervision of public health program on island of United States dependency; mild climate although vegetation is tropical. (f) Director of student health; men's college; enrollment of 800 students; nine-month year; possibility of continuing during summer months; town of 100,000; East. (g) Director of public health unit and, also, clinician in special field of maternal and child health; salaries depending upon experience and training; Southwest. **PH2-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health education director; state tuberculosis association; young man who meets qualifications of health education workers set by A.P.H.A. required; duties consist of originating materials, developing programs and assisting in promotion of health legislature; \$2,800–\$3,300; West. (b) Health educator; private, non-profit agency providing medical care and health services to large group of workers; Master's degree in education with major in health education desirable; \$3,600 plus travel allowance. **PH2-2** Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Consultant hygienist; student health education; young woman's college; enrollment around 4,000; duties consist of counseling students and discussing literature and information regarding illnesses; university town; Middle West. (b) Public health supervisor to supervise fifteen staff nurses; considerable executive experience required; Pacific Northwest. (c) Student health nurse; duties include serving as public health nurse in the university town; advantageous if candidate has had visiting nurse experience; West. (d) Two senior and two junior public health nurses; city department of health; Pacific Coast. (e) Supervising and staff nurses; department having important expansion program; East. **PH2-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

### Advertisement

## Opportunities Wanted

Public health specialist expecting early discharge after four years with Army; degrees Eastern schools including certificate in public health from Johns Hopkins; ten years' successful administrative experience in public health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist, now director of department, small college, is available for appointment; A.B., M.A., and Ph.D. degrees; seven years' teaching experience limited to Bacteriology and Immunology; recommended as a capable organizer; excellent teacher; for further information covering qualifications including bibliography, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator is available; A.B. degree eastern school; graduate training in public health; in charge department of public health education in municipal health department, eight years; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young physician well qualified as health educator; B.S., M.D. and master of health degrees; several years, director of university health service where he has carried a rather heavy teaching load; recommended as an exceptionally fine teacher, clear thinker about problems of education and student welfare, able to stimulate students to high degree of activity; for further information please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### DANGER OF MALARIA EPIDEMIC

#### STEADILY DECREASING

Risk of introduction of an epidemic of malaria by returning soldiers from overseas is continually decreasing, according to a statement by Major General Norman T. Kirk, Surgeon General of the Army.

The situation is reflected in the rate of admissions of malarious cases in hospitals in this country which reached a peak of 6,000 cases in February, 1945, and has been following a declining curve since that time, General Kirk said.

It is expected that the rate will continue to go down because a large proportion of the personnel of divisions heavily seeded with malaria in the early stages of the war already have been returned to this country.

At one time this disease was incapacitating about ten times more American soldiers than Japanese implements of war. The progress of the war in the Pacific in the early stages was seriously impeded until a special malaria control organization was established which helped bring this hazard under control, principally by anti-mosquito measures and atabrine.

During this high incidence of malaria in the Pacific there was concern that epidemics might develop in this country with the return of soldiers who had been infected. Since atabrine is not a cure but only a suppressive in most types of malaria, it was feared that returned soldiers who had stopped taking atabrine would suffer relapses which would lead to the spread of the disease here.

Lt. Colonel O. R. McCoy, Medical Corps, Chief of the Tropical Disease Control Division in the Preventive Medicine Service of the Surgeon Gen-

eral's Office, issued a statement in the fall of 1943 that, with proper precautions, there should be little danger of any serious epidemic of malaria in this country due to returning servicemen. Developments since that time have shown that the incidence of malaria among civilians in this country has not increased.

As men returned from overseas service during the latter part of 1943, the number of admissions to hospitals in the United States began to rise, bringing the total for the year to 5,075. Practically all of these cases represented relapses of malaria infections acquired overseas. In 1944 more than five times as many such cases were recorded, a total of 28,150. In the first six months of 1945 there were 30,420 such admissions. Since February, 1945, the curve has taken an abrupt downward turn that has steadily continued until the number of such cases is approaching the low level of the early part of 1943.

Colonel McCoy explained that in the majority of cases the disease has run its course after a man has suffered a few relapses, and no permanent damage has been done. Experience with the Pacific type of vivax malaria indicates that in 1,000 cases about one-third will have only one relapse. Only about 40 out of a thousand will suffer ten relapses, and only about one in a thousand will have as many as 20 attacks. The relapses are less severe as time goes on.

If a soldier who suffers a relapse of malaria is given proper treatment, the symptoms will be rapidly relieved and progress of the disease will be quickly suppressed, according to Colonel McCoy.

There is no permanent damage and only brief incapacitation results if

prompt and efficient action is taken. Fear of the disease due to lack of information can cause more harm than malaria itself.

The type of malaria of greatest military significance to American troops is vivax or benign tertian malaria, which is rarely a serious disease. About 90 per cent of Army cases are of this type. A man taking the necessary small doses of atabrine who has been infected with malaria can continue his arduous duties without suffering any symptoms. When the infected soldier stops taking atabrine the usual symptoms, chills, fever, headache and nausea, may appear. Atabrine does not always completely cure benign malaria.

Another type—malignant tertian malaria—which has been of concern to American troops can prove fatal if prompt and proper treatment is not given. Since this type can be completely cured by atabrine, it has not been so much of a problem as the benign type.

During a relapse a man may suffer loss of weight and anemia, but this can be corrected in a comparatively short time by rest, proper diet and, in some cases, a tonic. Complete recovery usually takes place before another relapse. The effects are not cumulative in the cases where individuals suffer a large number of relapses.

The yellow color the skin takes on as a result of taking atabrine gives concern to many victims of this disease. This is not due to jaundice or any malfunctioning of the body, but is caused by the yellow color of atabrine which is deposited in the skin. It will disappear a few weeks after the soldier stops taking atabrine.

Malaria has been a disabling disease in this war—it has been by far the major medical problem encountered by the Army overseas, but it has rarely been fatal. In the few cases of death, malaria has usually been associated

with other diseases and with circumstances which caused delay or inadequate treatment, according to Army records.

#### SOUTH AFRICA TO CREATE ITS WAR MEMORIAL IN HEALTH

A dispatch on January 9 from Pretoria, South Africa, carries a statement of the Ministry of Health that South Africa's national war memorial will be a healthy people. According to the statement, a nation-wide health appeal is to be launched, including plans for the establishment of an institute of nutritional research, health education, and scholarships to train a staff, particularly a non-European staff, for the national health service.

#### GENERAL KELSER APPOINTED DEAN OF VETERINARY MEDICINE AT PENNSYLVANIA

Brigadier General Raymond A. Kelser, who for the last 8 years has been Chief of the Veterinary Division of the Office of the Surgeon General, U. S. Army, Washington, has been appointed Dean of the School of Veterinary Medicine at the University of Pennsylvania at Philadelphia. He is expected to resume his duties shortly. General Kelser is the Chairman of the Standard Methods Committee on Biology of the Laboratory Animal of the Laboratory Section, A.P.H.A.

#### HARVARD APPOINTS GENERAL SIMMONS AS DEAN

President James B. Conant of Harvard University on January 9 announced the appointment of Brigadier General James S. Simmons, U.S.A., Chief of the Preventive Medicine Service, Office of the Surgeon General, Washington, as Dean of the Harvard School of Public Health, Boston, effective about July 1, 1946. General Simmons, who was born in 1890, received his medical degree at the Uni-

versity of Pennsylvania in 1915, a Ph.D. from George Washington University Medical School in 1934, and the doctorate in public health from the Harvard School of Public Health in 1939. He entered the Army Medical Corps in 1916, served as chief of laboratory services in various U. S. Army hospitals, and commanding officer of departmental laboratories and, from 1924 to 1928 was chief of the bacteriological department of the Army Medical, Dental and Veterinary Schools. He has lectured and written extensively on experimental bacteriology, preventive medicine, and tropical medicine. He has recently received the Distinguished Service Medal for his military work, and in 1943 was awarded the Sedgwick Memorial Medal by the American Public Health Association. He received the Sternberg Medal in 1940. General Simmons is President of the American Academy of Tropical Medicine and of the American Society of Tropical Medicine.



*James Stevens Simmons*

President Conant also announced the reorganization of the Harvard School of Public Health which will give it co-equal status in the University with the

Harvard Medical School and other professional divisions. He announced that the Rockefeller Foundation has granted a million dollars for the expenses of the school for ten years, beginning July 1, 1946, and that the University has set aside an additional sum of \$750,000 as an endowment to supplement the present endowment fund. In addition to its present building on Shattuck Street, Boston, the Harvard School of Public Health will occupy the Harvard-owned Collis P. Huntington Memorial Hospital nearby which will be remodeled, giving the school an additional 40,000 square feet of floor space.

#### CAPTAIN G. W. LARIMORE RECEIVES LEGION OF MERIT

The War Department has announced the award of the Legion of Merit to Capt. Granville W. Larimore, Chief of the Health Education Branch, Medical Intelligence and Health Education Division, Office of the Surgeon General, U. S. Army, for his outstanding educational work.

The award was made by Major General Norman T. Kirk, Surgeon General of the Army, in line with the War Department's policy of giving personal recognition to individuals who help provide what Secretary of War Patterson recently described as the best medical care any army ever received in any war.

#### DR. PETTY APPOINTED NEBRASKA STATE DIRECTOR OF PUBLIC HEALTH

Governor Dwight Griswold of Nebraska announced in December the appointment of Wallace S. Petty, M.D., of Lincoln, as State Director of Public Health, succeeding C. A. Selby, M.D., resigned.

Dr. Petty received his medical degree in 1908 and has been in public health work since 1925 when he joined the Missouri State Department of Health. He served for ten years with



the Iowa State Health Department, resigning in 1940 to attend the University of Minnesota where he obtained a Master's degree in public health work. Dr. Petty joined the Nebraska State Department of Health in January, 1942, and served for several months as Acting Director. He is a member of the A.P.H.A. Committee on Administrative Practice, representing the Health Officers Section.

AMERICAN MEDICAL ASSOCIATION  
APPOINTS GENERAL LULL  
TO STAFF

The appointment of Major General George F. Lull of Scranton, Pa., War Department Deputy Surgeon General, as Assistant Secretary and General Manager of the American Medical Association, Chicago, has been announced. General Lull has retired at his own request after more than thirty-three years in the regular Army. He served as Chief of Personnel for the Army Medical Corps from 1940 to 1943, when he became Deputy Surgeon General and was in charge of recruiting civilian physicians as reserve officers. The appointment was effective with the first of the year.

INDIANA SETS UP DIVISION OF  
GERIATRICS

L. E. Burney, M.D., State Health Commissioner of Health, Indianapolis, Ind., announces the creation of a new division in the Indiana State Board of Health to be known as the Division of Adult Hygiene and Geriatrics. The last Legislature provided for this new program and set forth the purpose in the following language: "The State Board of Health shall provide facilities and personnel for research, investigation, and dissemination of knowledge to the public concerning the health of persons of middle and advanced age and diseases common thereto, and also concerning dental pub-

lic health. The State Board of Health is hereby vested with discretion for providing means and methods for research, investigation, and dissemination of knowledge, and may make, adopt, and promulgate rules and regulations for establishing proper facilities and personnel and to carry on the work described in this section."

In creating this new division certain principles and objectives have been formed, and a program designed to accomplish these objectives is now being planned. The objectives, briefly stated, are as follows:

1. To study the factors of life that are related to senescence and senility and the diseases and disabilities associated with advancing years.
2. To plan for the care and well-being of those whose advancing years and experience entitle them to the best protection and support that medical knowledge and adequate care can provide.
3. To inform the public concerning diseases and disabilities of advancing age, and to stimulate the interest of the medical profession in diseases of age.
4. To cooperate with and assist both the lay public and professional groups in a full appreciation of the economic, social and cultural value and usefulness of men and women who by reason of age and experience constitute a most important group of our population.
5. To be interested in laws, rules and regulations, conditions and requirements as may affect the well-being and usefulness of men and women in advancing years, and to seek improvement of such laws, rules and regulations, conditions and requirements as may affect the elderly adversely.

The magnitude of the problem of advancing years, according to Dr. Burney, is indicated by recent United States Census reports. In 1900 approximately 18 per cent of the population of the United States had reached the age of 45 and over. The census of 1940 showed that 27 per cent of the total population were 45 and over. The number of men and women in the State of Indiana who today have at-

tained the age of 60 is in excess of 350,000. The number in this age group in continental United States is estimated above 13 million. Within the last census decade, 1930 to 1940, there was an increase in the number of persons of age 65 and over to 35 per cent, while in contrast the total population increase was but 7.2 per cent in the same period.

The Division of Adult Hygiene and Geriatrics is under the directorship of William F. King, M.D. The work of this division in carrying out its objectives will be watched with much interest, since this is said to be the first official activity by any state in this new field of public health endeavor.

#### DR. JOHN WHEELER APPOINTED NEW HAMPSHIRE STATE HEALTH OFFICER

John S. Wheeler, M.D., M.P.H., of Concord, N. H., has been appointed State Health Officer to succeed Alfred L. Frechette, M.D., M.P.H., who has resigned to become Health Officer of Brookline, Mass.

Dr. Wheeler, who is a graduate in medicine of Boston University Medical School in 1930, has his degree in public health from Johns Hopkins in 1938 and served for several years as epidemiologist and director of the Division of Local Health Work in New Hampshire, beginning in 1937.

#### NATIONAL CONFERENCE FOR COOPERATION IN HEALTH EDUCATION MEETS IN NEW YORK

A two day session of the National Conference for Cooperation in Health Education met in New York City December 29 and 30, and was well attended by representatives of various national agencies who came from as far west as California. Ira V. Hiscock, D.Sc., Professor of Public Health at Yale University School of Medicine, New Haven, represented the American Public Health Association.

The following officers were elected:

*Chairman*, Dr. John L. Bracken, Superintendent, Board of Education, Clayton, Mo., representing American Association of School Administrators

*Vice Chairman*, Bosse B. Randle, R.N., Mineola, N. Y., representing N.O.P.H.N.

*Secretary*, Vivian Drenckhan, New York, representing National Tuberculosis Association

*Additional members of Executive Committee*: W. W. Bauer, M.D., American Medical Association; Mayhew Derryberry, Ph.D., U. S. Public Health Service

#### CANADIAN PUBLIC HEALTH ASSOCIATION APPOINTS EXECUTIVE DIRECTOR

The Canadian Public Health Association, Toronto, has announced the appointment of J. H. Baillie, M.D., D.P.H., as Executive Director. Dr. Baillie is a graduate in medicine from the University of Toronto in 1938 and holds the Diploma in Public Health from Toronto in 1941. He has had experience in practice and has served in the Royal Canadian Air Force, where his services were recognized by a series of promotions. He recently has been in charge of hygiene and preventive medicine in the Directorate of Medical Services, Ottawa.

#### MASSACHUSETTS DENTAL SURVEY

The Dental Bureau of the Massachusetts Department of Public Health, in preparation for conducting a research program in the control of dental caries, is making a survey to determine the incidence of caries among children by age groups and to determine the availability of sufficient dentists to cope with the existing problem.

The fluoride content of all public water supplies in the state has already been determined and in only one town, Farnumsville, was as much as 1 part per million of sodium fluoride (1.3 p.p.m.) found. In all other public water supplies the amount of sodium fluoride was near 0.2 p.p.m.

These data will be used as the basis for the proposed study which will investigate the control of dental caries by utilizing fluorides in the following ways: in public water supplies, in prophylactic pastes and mouth washes, in pastilles and lozenges, in pills, and in topical applications.

DR. PERKINS APPOINTED NEW YORK  
STATE DEPUTY COMMISSIONER

Edward S. Godfrey, Jr., M.D., New York State Commissioner of Health, Albany, has announced the appointment as Deputy Commissioner of Health of James E. Perkins, M.D., Dr.P.H., who has been associated with the department for the past 12 years as epidemiologist, as District State Health Officer, and more recently as Director of the Division of Communicable Diseases. Dr. Perkins is a graduate in medicine of the University of Minnesota and in public health from Johns Hopkins School of Hygiene and Public Health. He is Associate Professor of Public Health and Preventive Medicine at the Albany Medical College, and serves as Associate Editor of the *American Journal of Public Health*, as well as Secretary of the Epidemiology Section, A.P.H.A. He recently was appointed Chairman of the A.P.H.A. Subcommittee for the Evaluation of Methods to Control Air-borne Infection. Dr. Perkins served for several months during 1945 in Italy as a commissioned officer of the U. S. Public Health Service, making a survey of the effect of the war on the Italian civilian population with regard to nutrition and communicable diseases.

DR. SUMNER MILLER OF PEORIA DIES

Dr. Sumner M. Miller of Peoria, Ill., full-time Health Officer of Peoria since 1938, died December 14 at the age of 72, after a long illness.

Since 1906 Dr. Miller had been actively identified with community

health services in Peoria. He was President for 17 years of the Peoria Tuberculosis Society and was the founder and first President of the Peoria County Chapter of the American Red Cross. He was a Fellow of the American Public Health Association and a founder and President of the Illinois Public Health Association.

Following a reorganization of the Peoria Health Department in 1938, Dr. Miller left the active practice of medicine and developed the department so that it won recognition in 1943 and 1944 of the cities in its population group in the inter-chamber Health Conservation Honor Roll.

DR. DON W. GUDAKUNST DIES

Don W. Gudakunst, M.D., Dr.P.H., Medical Director of the National Foundation for Infantile Paralysis for the last six years, died January 20 from a heart attack in Chicago at the age of 51. Dr. Gudakunst, who was a native of Ohio, held a medical degree in 1919 from the University of Michigan. Dr. Gudakunst had served since 1924 in various public health capacities, beginning with the School Health Service in Detroit, where he was also Deputy Commissioner of Health and later, in 1938-1939, Michigan State Commissioner of Health. He served for a time before 1940 in the Reserve of the U. S. Public Health Service and since that time has been Medical Director of the National Foundation for Infantile Paralysis, New York, expanding the program of research and medical care. He was a Fellow of the American Public Health Association and Chairman of the Committee on Eligibility at the time of his death.

AMERICAN WATER WORKS ASSOCIATION  
1946 CONFERENCE

The American Water Works Association 1946 Conference will be held in St. Louis, Mo., May 6-10.

## PERSONALS

## Central States

CLAYTON C. BENJAMIN, M.D.,† Manistee, Mich., has resigned as Health Officer of Mason County to accept a similar position for the city of Port Huron, Mich.

ROBERT E. FLOOD, M.D., Northport, Mich., has been appointed Director of the Michigan District Number 7 Health Unit to succeed DR. MADELINE M. DONNELLY, Gladwin.

## CHANGES IN HEALTH PERSONNEL IN ILLINOIS:

LESLIE W. KNOTT, M.D., M.P.H.,† on leave of absence from the U. S. Public Health Service, was appointed Medical Administrative Assistant, Illinois Department of Public Health, effective November 15. He has been replaced in the Division of Venereal Disease Control by Dr. CHARLES H. MILLER.

JEAN CHRISTOPHER, M.S.P.H.,\* has been appointed Acting Chief of the Division of Public Health Education, Illinois Department of Public Health, effective November 1.

O. K. SAGEN, PH.D.,† has been appointed Chief, Division of Vital Statistics and Records, effective December 1.

MAJOR CLARENCE W. KLASSEN\* resumed his duties as Chief of the Division of Sanitary Engineering, Illinois Department of Public Health, effective October 12.

JAMES W. CHAPMAN, M.D., M.P.H.,\* succeeded DR. SIDNEY I. FRANKLIN as Health Officer of the DuPage County Health Department, Villa Park, Ill., effective November 1. Dr. Chapman was formerly Health Officer of the McMinn County Health Department, Athens, Tenn.

NEWTON W. LARKUM, M.D.,\* after more than 4½ years on active duty

in the Army, during which period he served for a while as Chief of the Division of Bacteriology at the Army Medical School and later as Chief of Laboratory Service, 100th General Hospital in England and France, has been released. Before the war he was connected with the Michigan Department of Health. At present Dr. Larkum is Medical Director for the Ames Company of Elkhart, Ind.

PAUL A. LINQUIST, M.D.,† Surgeon (R), USPHS, has been released to inactive status in the service and has been appointed City-County Director of Health for Kansas City and Wyandotte County, Kan.

CHARLES M. MCGILL, M.D., of the U. S. Public Health Service, has been named Chief of the Industrial Hygiene Division of the Ohio State Department of Health.

## CHANGES IN HEALTH PERSONNEL IN NORTH DAKOTA:

LT. COL. LLOYD K. CLARK,\* after nearly 5 years of army service, returned to his former position as Director of the Division of Sanitary Engineering. He replaces JEROME H. SVORE, Senior Sanitary Engineer in the department, who had been Acting Director.

DR. WILLIAM M. SMITH,\* Rome, N. Y., has been named Director of the Division of Preventable Diseases. DR. CAMPANA had been serving as Acting Director of this Division.

ROBERT R. KLING, M.D., Bismarck, was chosen Tuberculosis Consultant in the Division of Preventable Diseases.

CARL A. SCHERER, M.D.,† Duluth, Minn., has been appointed Health Officer of the Sutter-Yuba Bi-County Health Unit, effective September 5. Before going to California, Dr. Scherer was for 10 years Health

\* Fellow A.P.H.A.

† Member, A.P.H.A.

Officer of St. Louis County, Minn., and Director of Rural Health Unit 4 of the Minnesota State Board of Health.

C. A. SELBY, M.D.,† resigned as State Health Director in Nebraska, effective January 31, as announced in December by GOVERNOR DWIGHT GRISWOLD. Dr. Selby, who is a resident of North Platte, Neb., has served since November, 1942.

CHARLES F. WAGG, M.D., Executive Secretary of the former Michigan State Hospital Commission, has been named Acting Executive Officer of the new Michigan Department of Mental Health, pending formulation and adoption of a permanent organizational structure. The new department, which was set up by the 1945 legislature, is now attempting to find a satisfactory candidate for the position of Director of Mental Health.

WILLIAM D. WEIS, M.D.,† has been selected by the Board of County Commissioners of Lake County, Ind., for the fourth time to serve a 4 year term as County Health Commissioner.

#### Eastern States

LT. COL. WALTER M. CULLEY, SN.C.,† for the past 4 years Chief Sanitary Engineer of the Second Service Command and stationed at Governors Island, has become associated with J. LLOYD BARRON\* as a Sanitary Engineer for the National Biscuit Company with offices in New York City. Mr. Culley was formerly engineer of the Chester, Pa., Municipal Authority Water Service.

ALFRED L. FRECHETTE, M.D.,† Secretary and State Health Officer of the New Hampshire State Board of Health, Concord, has resigned to become Health Officer of Brookline, Mass. MAJOR JOHN S. WHEELER, formerly Deputy Health Officer in

New Hampshire, has been appointed Health Officer as of December 1.

COLONEL WILLIAM A. HARDENBERGH, SN., A.U.S., who has been Director of the Sanitation and Sanitary Engineering Division, Preventive Medicine Service, Office of the Surgeon General, U. S. Army, Washington, has returned to civilian life, resuming his position as Editor of the *Public Works Magazine*, New York City.

HOLLIS S. INGRAHAM, M.D., M.P.H.,\* has been appointed provisionally as Director of the New York State Health Department's Division of Communicable Diseases, succeeding JAMES E. PERKINS, M.D.,\* Deputy State Health Commissioner. Dr. Ingraham has been associated with the Health Department for 12 years with the exception of the past 3½ years spent in the Navy.

#### CHANGES IN HEALTH OFFICERS IN NEW YORK STATE:

PAUL B. BROOKS, M.D.,\* Deputy State Health Commissioner, has announced has retirement effective December 31. Dr. Brooks was appointed Sanitary Supervisor on March 1, 1915. Later he served as Director of the Division of Communicable Diseases, Assistant to the Director of the Division of Laboratories and Research, and was appointed Deputy State Health Commissioner by DR. NICOLL on July 1, 1923. He has continued to serve in this capacity since that time.

SAMUEL HYMAN, M.D.,\* Utica District State Health Officer, resigned October 15 and is now in Chicago.

GEORGE JAMES, M.D.,† ERNEST S. KINSEY, M.D.,† and DONALD C. TULLOCH, M.D.,† were appointed Assistant District Health Officers

\* Fellow A.P.H.A.

† Member, A.P.H.A.

effective June 1, 1945, and were assigned to the Middletown, Binghamton and Albany district offices respectively.

KENNETH S. LANDAUER, M.D.,† was appointed Director of the New York State Reconstruction Home effective November 1, 1945.

LOUIS PLATT, M.D.,† Assistant District Health Officer in the Rochester District, resigned effective October 16, 1945.

W. C. SPRING, M.D., Jefferson, O., and C. M. STEWARD, M.D., Norwich, N. Y., were appointed Apprentice Epidemiologists effective November 16 and December 1, respectively.

THOMAS C. STOWELL,† Assistant Director of the Division of Public Health Education is on leave of absence to serve as Director of the Radio Bureau of the Department of Commerce.

MATTIE WASHBURN, R.N., Assistant Director of the Division of Public Health Nursing, has announced her retirement effective December 31. Miss Washburn was first appointed to the position of Supervising Nurse on August 9, 1920. She was appointed Assistant Director of the Division of Public Health Nursing on March 1, 1933.

ROBERT S. WESTPHAL, M.D.,\* formerly Assistant Director of the Division of Syphilis Control, was appointed to the position of District State Health Officer and assigned to the Rochester District effective June 4, 1945.

RUTH RIVES, R.N.,† former District Supervising Nurse at Glens Falls, N. Y., has been appointed Assistant Director of the Division of Public Health Nursing, effective January 1.

DAVID R. SALMON has been appointed Executive Director of the National

Council on Rehabilitation, New York, N. Y.

COLONEL JAMES A. TOBEY, SN.C.,\* returned to his home in Rye, N. Y., on December 24 after 2 years and 8 months overseas. During this period, he participated in 7 combat operations and served with the U. S. military Government in North Africa, Sicily, Italy, England, France, and Germany. For 7 months prior to his return, Colonel Tobey was Deputy Military Governor and Chief of the Department of the Interior in Wurttemberg-Baden. In this area of over three million German population, he had charge of public health, public welfare, public safety, public works, and administration and local government. He has received three decorations from the French Republic.

G. HAROLD WARNOCK, M.D.,\* has returned from military service to his position as epidemiologist with the Nassau County Dept. of Health, Mineola, N. Y.

#### Southern States

THOMAS MALCOLM BLAKE, M.D., has been named Health Officer of Winston County, Ala., to succeed Dr. HUGH C. McREE,† Hamilton, who resigned September 1. Dr. MARVIN S. WHITE, Hamilton, has been named to a similar position in Marion County also to succeed Dr. McRee.

SAMUEL R. DAMON, PH.D.,† who has been Director of Laboratories with the Alabama State Department of Health for several years, and formerly Associate Professor of Bacteriology at Johns Hopkins School of Hygiene and Public Health, Baltimore, has resigned to become on January 1 Director of the Bureau of Laboratories of the Indiana State Board of Health, Indianapolis.

HOWARD W. ENNES, JR.,† Lieut. H(S), USNR, was commended for services

\* Fellow A.P.H.A.

† Member, A.P.H.A.

during the war in the Venereal Disease Control Section, Bureau of Medicine and Surgery, Navy Department, by VICE-ADMIRAL ROSS T. MCINTIRE (MC), USN, Surgeon General of the Navy, by direction of the Secretary of the Navy. Lieut. Ennes is serving as Assistant to the Officer in Charge of the Venereal Disease Control Section.

RICHARD J. PLUNKETT, Major, MC, AUS,<sup>†</sup> has been appointed Field Consultant for the Division on Health and Sanitation, Institute of Inter-American Affairs. The appointment is part of the Institute's plan to mold wartime coöperative advances in hemisphere health into permanent peacetime channels. Major Plunkett has already started a lengthy inspection and consulting tour which will take him to Bolivia, Chile, Uruguay, Peru, Ecuador, Colombia and the republics of Central America, according to an announcement.

WILLIAM P. SCARLETT, M.D.,<sup>†</sup> Morrilton, Ark., formerly Health Officer of Wichita, Tex., has been named Health Officer of Little Rock, Ark.

#### Western States

C. ARTHUR ELDEN, M.D.,<sup>†</sup> was appointed Obstetric Consultant with the Washington State Department of Health on November 15, and will work in the Maternal and Child Health and Crippled Children's Section. Dr. Elden had previously been Assistant Professor of Obstetrics and Gynecology at the University of Rochester Medical School for 13 years at Rochester, N. Y., and also was in private practice during that time.

HELEN G. SCHWARTZ resigned from her position as Assistant Director in charge of the Western Area, Division of Nurse Education, U. S. Public Health Service, as of January 1. She has gone to Minnesota to take up her new position as Nurse Education

Advisor on the Minnesota State Board of Nurse Examiners.

GEORGE M. SHAHAN<sup>†</sup> has resigned his position as Assistant Executive Secretary and Director of Public Relations with the Los Angeles Tuberculosis and Health Association, Los Angeles, Calif., and has been appointed Executive Secretary of the Washington Tuberculosis Association with headquarters in Seattle.

IRVIN R. VAUGHN, Seattle, Wash.,<sup>†</sup> who was appointed as Acting State Registrar with the State Department of Health on November 26, will be the Acting Head of the Public Health Statistics Section. Mr. Vaughn was formerly Director of Vital Statistics for the State Board of Health of South Dakota.

#### Foreign

G. HOWARD GOWEN, M.D. (Lt. Col., MC, AUS),<sup>\*</sup> has returned to the University of Michigan School of Public Health after 31 months overseas in North Africa, Italy, France and Germany where he was Director of Laboratories, Epidemiologist and head of the Preventive Medicine Section of the 7th Army for 12 months.

LT. COL. WILLIAM REINER-DEUTSCH, SN.C.,<sup>†</sup> lately Executive Officer of 191 General Hospital in Paris, has returned to New York City.

<sup>\*</sup> Fellow A.P.H.A.

<sup>†</sup> Member, A.P.H.A.

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# American Journal of Public Health

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## The Place of Fertility Control in Public Health\*

REGINE K. STIX, M.D.

*New York, N. Y.*

WITHIN the past fifteen years there has been growing recognition of the fact that the "birth control movement" is only a new aspect of an age-old attempt on the part of people to solve for themselves the problems of family size. Historical records show that, in addition to abortion and infanticide, crude methods of contraception have been used as a means of controlling fertility since 1500 B.C. or earlier.<sup>1</sup> There is increasing understanding of the close association between the problems of excess fertility and sterility and those of infant and maternal morbidity and mortality, and, as a result, a number of states and cities are including advice on fertility control in their maternal health programs. It seems timely, therefore, to review briefly the background of the public health aspects of the problem and to appraise what has been done in the field to date.

The results of population studies in the United States within the past fifteen years have revealed certain persistent

trends and differentials which bear directly on the rôle which public health may play in dealing with the problems of fertility. The approach is twofold: the prevention of disease associated with childbearing, where possible, and the more indirect effort to raise general standards of health by lowering excess population pressures and improving standards of living.

Clear-cut regional, rural-urban, and socio-economic differentials in fertility have characterized the population picture in the United States for the past century or more. They were still present in 1940, when the ratio of children to women was approximately 65 per cent higher in the predominantly rural East South Central states than in the highly industrialized Middle Atlantic region. For the country as a whole, fertility rates of white farm women were 120 per cent higher than those of women in cities of 500,000 and over, and there was a consistent decline in fertility with increasing size of community.<sup>2, 3</sup>

Within each region there has also been a persistent inverse association be-

\* Special Review Article, prepared at the request of the Editorial Board.



tween birth rates and socio-economic status. Birth rates have been highest in those groups with the lowest incomes and the least education, and lowest in the groups with the highest educational attainment and highest incomes. Within the last two decades, however, there has been a tendency for rates to remain relatively stable among groups with the highest socio-economic status, while still declining in the lower income and less educated groups. Thus, since 1930, fertility rates in the group with the highest economic status have been slightly higher than those in the next lower socio-economic group. This may presage the beginning of a change in the general trend which has persisted since the industrial revolution.<sup>4</sup>

Until Raymond Pearl published his study of the prevalence and effectiveness of the contraceptive efforts of a large group of women who came to hospitals in cities east of the Mississippi to bear children, it was generally believed that women in the lower economic levels were innately more fertile than those of higher economic status. There was much discussion of the effect of higher education and careers for women on their ability to bear children. Pearl's study presented for the first time scientific evidence that the observed differentials in birth rates were due, in major part if not entirely, to differences in the prevalence and effectiveness of contraception and abortion in the various socio-economic groups. Pregnancy rates when no contraception was used showed no significant differences from group to group. Pearl found a direct association between the prevalence and effectiveness of contraception and socio-economic class. Before the wife came to a hospital to have a baby, 78.3 per cent of the well-to-do and rich couples in his group had used contraception, but only 32.7 per cent of the poor couples had attempted contraceptive practice.<sup>5</sup>

Pearl's findings have been substantiated by later studies of selected samples of women who showed a special interest in controlling their fertility by attending birth control clinics or accepting special advice on contraception. Even before these women were given special advice on birth control techniques, differences in the prevalence and effectiveness of contraceptive practice were the main determinants in birth rate differentials within the groups studied. These studies of women who came to clinics for advice on contraception or who were given such advice by a nurse in their homes were made in four areas. The three clinic populations studied were a selected group of women from the Bronx, who attended the Birth Control Clinical Research Bureau in New York City, a group of patients of the Cincinnati (Ohio) Maternal Health Clinic, and a group who attended the Spartanburg (S. C.) Maternal Health Clinic. The field study was made in Logan County, W. Va.<sup>6-9</sup>

The women in Pearl's sample, being patients in maternity hospitals, constituted a select group with respect to overt fertility and could by definition include only those women who bore at least one child each during the period of study. The women in the other studies quoted, who sought or accepted special contraceptive advice, were probably highly fertile. Thus, until very recently, our knowledge of the prevalence and effectiveness of contraceptive practice has been limited to information about families with demonstrated fertility.

The first detailed study of a large population group, unselected with respect to overt fertility or a special interest in fertility control, was initiated in 1941. It was conducted in Indianapolis by the Committee on Social and Psychological Factors Affecting Fertility, and sponsored by the Milbank Memorial Fund, with grants from the

Carnegie Corporation of New York. To date, only the preliminary analyses of the material have been published, but unpublished data appear to substantiate the thesis that variation in the prevalence and effectiveness of contraceptive practice is probably the most important factor in the production of differentials in fertility in a group which is fairly representative of the white urban population of the United States.<sup>10</sup>

Materials for all the studies discussed above were secured by interviewing women\* and ascertaining from them, in addition to basic data on age, date of marriage, etc., information concerning the date and type of termination and length of gestation of each pregnancy and the type of contraceptive practice, if any, which preceded it. The women were also asked whether contraceptive practice was deliberately interrupted in order to permit pregnancy to occur, and, if the pregnancy terminated in abortion, whether the abortion was spontaneous or induced. Information concerning morbidity associated with pregnancy was also collected. A mass of interesting data was secured, but for the purposes of this review, discussion will be limited to those data relating to contraceptive practice.

In all groups studied, the couples involved had used mainly the types of contraception generally available, rather than the occlusive feminine methods frequently advocated by physicians and in general use in birth control clinics. Those most commonly used in the rural South, as well as in large cities, were condoms, coitus interruptus and douches of various kinds. Pregnancy rates computed separately for experience with each type of contraceptive, and compared with those of the same groups of women when no contraception was used,

show that even without special instruction in approved techniques, the use of contraception reduced the risk of pregnancy considerably, depending on the type of contraception used and the regularity of its use.<sup>9-13</sup>

In each of the studies discussed, the method of computing pregnancy rates consisted in relating total reported experience without contraception to the number of pregnancies occurring during this experience, and in making a similar type of computation for experience with all contraceptives and with each separately. Time pregnant and prolonged absences of husband and wife were subtracted from the total experience, since during these periods the wife was presumably not exposed to the risk of pregnancy. Pregnancy rates were computed as pregnancies occurring in each hundred-person years' exposure to the risk of pregnancy. Experience of all couples in each category of contraceptive or non-contraceptive experience was pooled.<sup>14, 6, 9</sup>

Certain findings were common to all the studies. Pregnancy rates during periods when no contraception was used showed no significant differences for different socio-economic groups, when the experience of women with known pelvic pathology was excluded from the total experience.<sup>5-7</sup> There were regional differences in the total non-contraceptive rates observed in New York, Cincinnati, and the two southern groups, which were largely attributable to differences in the proportions of women in the four groups who were known to have serious pelvic pathology or other diseases which might interfere with fertility. Rates without contraception were highest in the New York group and lowest in the two southern rural groups studied.<sup>8, 9</sup> Because of the wider and more effective use of contraception in the urban areas, however, pregnancy rates for all experience, with and without contraception, showed pre-

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\* In the Indianapolis study, schedules were secured from both husbands and wives.

TABLE 1

*Mean Number of Months of Exposure per Pregnancy for the Non-contraceptive Experience of Four Groups of Women Prior to Clinic Attendance*

Order of Pregnancy	White Patients of						Negra Patients of	
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic		Spartanburg Maternal Health Clinic			
	Mean Number of Months of Exposure per Pregnancy							
First pregnancies	4	7	7				8	
All later pregnancies	11	13	17				15	
	Exposure in Months and Number of Pregnancies							
	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.
First pregnancies	2,393	540	8,051	1,121	3,224	433	2,676	353
All later pregnancies	3,883	341	20,357	1,583	20,862	1,228	18,667	1,283

cisely the reverse differential, with the highest rates in Spartanburg and in Logan, and the lowest in New York City.

The average woman in the New York group conceived her first pregnancy 4 months after marriage, when no attempt was made to use birth control methods. In Cincinnati, and for both Negro and white women in Spartanburg, the average interval between marriage and the first conception was between 7 and 8 months.

After the first pregnancy, the rate of conception was lower, even when no attempt was made to control fertility, probably because of lactation and associated amenorrhea. The differences observed between the groups were in

the same direction as those observed for first pregnancies, but less marked (Table 1).

For those couples who practised contraception from marriage, the elapsed time between marriage and the first pregnancy was considerably longer than when no contraception was used, and the same was true of the exposure for later pregnancies as may be seen in Table 2.

The effectiveness of the contraception used varied considerably from group to group. For the New York women, the types of contraception used before clinic attendance reduced the risk of pregnancy by 79 per cent. In Cincinnati, the risk was reduced by 52 per cent; while in Spartanburg, the white women

TABLE 2

*Mean Number of Months of Exposure per Pregnancy for the Experience with Contraceptives of Four Groups of Women Prior to Clinic Attendance*

Order of Pregnancy	White Patients of			Negra Patients of Spartanburg Maternal Health Clinic				
	Clinical Research Bureau (N. Y. C.)	Cincinnati Maternal Health Clinics	Spartanburg Maternal Health Clinic					
	Mean Number of Months of Exposure per Pregnancy							
First pregnancies	29	17	10	11				
All later pregnancies	44	22	28	21				
	Exposure in Months and Number of Pregnancies							
	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.	Exp. Mo.	No. Preg.
First pregnancies	5,085	174	4,330	254	934	50	248	22
All later pregnancies	63,838	1,459	73,655	3,379	13,656	484	3,493	170

had rates 47 per cent lower than were observed during the periods when no contraception was used, and the Negro women, rates 28 per cent lower. The effectiveness of untutored efforts at contraception noted in other studies ranged between 46 and 63 per cent.<sup>13, 9</sup>

The practice of contraception in each case included all types of use, both regular and irregular, and it is obvious that couples in the rural areas, who had less access to contraceptive materials than those in the urban areas, not only used less effective contraceptives, but used them less regularly, because of more primitive living conditions.

Most of the couples who practised contraception from the time of marriage, as well as many others who started its use after the first or second pregnancy, interrupted its use for at least one "planned pregnancy." Twenty-two per cent of first pregnancies, 25 per cent of second pregnancies, and 20 per cent of third pregnancies in the New York group studied, resulted when the practice of contraception was deliberately interrupted in order to permit pregnancy to occur. Pregnancy rates for these conceptions were consistently and significantly higher than those of women in the same group who had never used contraception. Fifty-four per cent of these "planned pregnancies" were conceived within a month after the couples stopped using contraception, and 80 per cent of them within 3 months.<sup>6</sup>

Rates for "planned pregnancies" in the other groups studied were of the same order, but there was insufficient material for publication. Thus, there is no indication that the use of contraception, at least in the groups observed, impaired the fecundity of the users.

The professional contraceptive services offered these women were of three types. In New York, women came of their own accord to a voluntary agency—the Birth Control Clinical Research

Bureau—for advice about controlling fertility which appeared to them alarmingly high. Many of them had resorted to abortion to control the size of their families.<sup>6</sup>

In Cincinnati, the Maternal Health Clinic sponsored by the local Academy of Medicine advised mainly women referred for health reasons. They did not conceive as rapidly as the women in the New York group before they attempted contraception, but, because they used less contraception and used it less effectively, the average number of pregnancies per woman was greater. Some of them were referred because of illness contraindicating further pregnancy, and others because poor economic conditions and large families were already placing intolerable burdens upon them.

The Spartanburg Maternal Health Clinic, in the Spartanburg General Hospital, is one of the regularly operated clinics of the County Department of Health. It accepts only patients referred from other clinics in the General Hospital. Each record in the series studied contained a digest of the medical findings, a report of pelvic examination, and laboratory reports on vaginal and urethral smears, Wassermann and urinalysis. The series did not, of course, include women with sterilizing pathology, since such women would not have been referred for contraceptive advice.

Table 3 shows the distribution of cases by the main reason for advising contraception. Only 19 per cent of the white women and 16 per cent of the Negro women referred during the years 1935–1939 were referred for child-spacing only. The remainder were referred because of illness which made it inadvisable for them to become pregnant. More than 40 per cent were referred because of serious illness, such as tuberculosis, syphilis, heart disease, nephritis, or pellagra; an additional 30 per cent were referred because of

TABLE 3

*Distribution of Reasons for Advising Contraception for Patients of the Spartanburg Maternal Health Clinic*

<i>Main Reason for Advising Contraception</i>	<i>White Women</i>	<i>Negro Women</i>
Total Number of Women Advised *	532	455
	<i>Per cent Advised for Each Reason</i>	
Total	100.1	100.0
Child Spacing Only	19.0	16.3
Tuberculosis or Tuberculosis Contact	4.9	1.5
Syphilis or Syphilis Contact	4.5	25.1
Cardiac or Vascular Disease	4.7	6.8
Pyelitis, Nephritis, or Previous Toxemia	10.7	6.8
Pellagra	5.1	0.4
Anemia or General Debility	32.7	27.7
Tumor	0.9	0.9
Diseases of Endocrine Origin †	3.4	2.2
Diseases of the Pelvis Other than Tumor	5.3	5.3
Neurological or Psychiatric Disease	2.1	0.2
All other Reasons ‡	6.8	6.8

\* Neither the medical diagnosis nor the reason for advising contraception was noted on the records of one white and two Negro women.

† Mainly diabetes and thyroid disease.

‡ Includes arthritis, diseases of the gastrointestinal tract other than tumor, varicose veins, phlebitis, non-tuberculous diseases of the respiratory tract, obesity, dental caries, and infected tonsils.

anemia or general debility, and the remainder for other medical reasons.

In Spartanburg, almost all the women referred for contraceptive advice were also in need of some sort of gynecological care. More than 90 per cent had perineal and cervical lacerations, and about 80 per cent had cystocele or rectocele or both.<sup>15</sup> Detailed data concerning medical findings are not available for any other group of women studied. Spartanburg data, however, show that among the type of women served by a county health department in a semi-rural southern area, there is ample reason for the establishment of contraceptive services from a purely medical point of view. It is obvious that if these women had become pregnant before their general health was improved, pregnancy would have constituted a hazard both to the mother and her child.

Even without established clinical services to advise couples on birth control methods, there are widespread attempts on the part of the population everywhere to space births and to limit the number of their offspring. Frequently, ineffective and harmful meth-

ods may be used through ignorance, and when these fail to prevent conception, there is resort to abortion, with resultant serious injury to health.

For the women to whom pregnancy would constitute a serious health hazard, there is no choice for the physician but to offer the most effective contraceptive methods available, to perform a sterilizing operation, or to counsel abstinence for long periods. No perfect contraceptive method has been discovered to date, but a number of methods can be highly effective, when acceptable to the couples using them and when used regularly and with care.

For groups given special advice on birth control, the pessary with jelly has proved very effective. This was the method prescribed for more than 90 per cent of the patients served in the New York, Cincinnati, and Spartanburg clinics, and when used it prevented between 80 and 95 per cent of the pregnancies which would have occurred had the couples used no contraception. In Spartanburg, the effectiveness ratio was about 80 per cent for both white and Negro patients; in Cincinnati, 90 per

cent; and in New York, 94 per cent. The use of other types of contraception was also highly effective after the women had learned something about the anatomy of coitus and the reasons for care and diligence in the use of all contraceptives. All types of contraception other than those prescribed were 92 per cent effective for New York couples, 72 per cent for Cincinnati couples, 81 per cent for Spartanburg white couples, and 55 per cent for Spartanburg Negroes.<sup>8</sup>

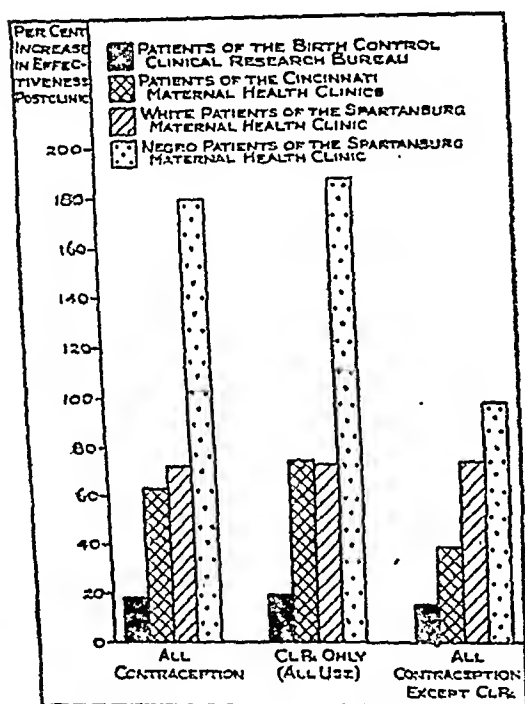


FIGURE 1—Per cent of increase in the effectiveness of the contraception used after clinic attendance over that used before clinic attendance, for four groups of women.

Figure 1 shows the per cent of increase in the effectiveness of all contraception used by the groups studied after they had been advised, over that used before they were advised. The greatest increase in effectiveness was in those groups in which preclinic contraceptive practice was relatively ineffective, the smallest among New York couples who had used contraception

very effectively before they attended a clinic.

The Logan group did not attend a maternal health clinic. The service there consisted in the distribution of contraceptive jelly by a nurse to all women in the area referred to her by doctors and to others who requested the service. Here, the emphasis was on general reduction of birth rates in a mining area of high fertility and extremely low economic status. The method prescribed was not so effective as those prescribed in areas where clinical facilities could be made available, but its use was followed by a reduction of 43 per cent in the pregnancy rates of the women in the area.<sup>9</sup>

Not all the women who came for or accepted advice on contraceptive methods, in the studies cited, used what was given them, but between 88 and 97 per cent made some attempt to use the methods prescribed.\* The proportion of women who continued to use the prescribed methods decreased first rapidly and then more gradually, until a year after their first contact with a clinic, less than two-thirds of those women who were found and interviewed were still using the prescribed methods.<sup>8</sup> Those giving up the use of the contraceptives prescribed for them turned to the methods in general use before they attended the clinics, and their use of these methods was, as has been noted, almost as effective in preventing pregnancy as were the presumably safer methods.

It was apparent in studying the material in detail that the training of patients to understand their own anatomy and the proper care of contraceptive devices is more important than the type of method prescribed, in achieving fertility control. Some couples prefer one type of method, some another, and still others may prefer to use several different

\* For the per cent of women using types of contraception prescribed for them, in these and other studies, see Beebe, *op. cit.*, p. 155, Table 37.

methods in rotation. It is important that physicians and nurses prescribing contraception take individual choice of methods into account and instruct patients in the best use of the contraceptives of their choice. A method relatively ineffective for some couples may be highly effective for the couple liking it and using it diligently. Conversely, the most effective method is of no use to the couple who dislike it and will not use it.<sup>13</sup>

The single-mindedness with which occlusive vaginal methods are prescribed in most contraceptive clinics and by most physicians is obviously unsound. If between a third and half of the patients for whom pessary and jelly are prescribed give up their use within a year and more couples give them up as time goes on, it would seem wise to question patients closely concerning their choice of contraceptives and to advise them how best to use the contraceptives of their choice. Patients unacquainted with the use of pessary and jelly should be instructed to return for training in the use of other techniques if the one first prescribed is not satisfactory.

The U. S. Public Health Service, in 1941, declared its stand on the inclusion of contraceptive services in state maternal health programs in the following statement:

"It is the policy of the Public Health Service to cooperate with the health departments of the various states in the programs that they decide are in the best interest of the protection and advancement of the people they serve.

"Should a State Department of Health decide on its own initiative to undertake a child-spacing program in accordance with the health laws of the State, the Public Health Service would give the proposal the same consideration as would be given to any other proposal in connection with the health program of the state."\*

A number of southern states have pioneered in including contraceptive

clinics and services in the maternal health programs in many of their county health units. These states are North Carolina, Alabama, South Carolina, Florida, Mississippi, and Texas. In these states the approval of the state medical society was sought and obtained before the program was instituted. The individual county medical societies also approved it before it was introduced into each county. The Planned Parenthood Federation has given technical aid and some subsidies for supplies as a means of encouraging the establishment of services under public health auspices. The types of service vary with available clinical facilities and range from the intramural clinic under county health department supervision, like that in Spartanburg, to the services of a visiting staff of public health nurses, who, in addition to their other duties, can instruct women in their homes in simple techniques requiring no fitting, when the need arises.

State medical societies of Georgia, West Virginia, and Virginia have recommended that these states establish contraceptive services for indigent women under state health department supervision. In addition, there are scattered clinics under local health department supervision in various places in the United States.<sup>16</sup> More services will doubtless be established when trained physicians, now in the Army and Navy, become available.

Since 1941, the Council on Pharmacy and Chemistry of the American Medical Association has considered contraceptive drugs for acceptance on the same basis as other drugs, and standards for certain contraceptive products<sup>17</sup> were accepted for inclusion in the 1944 edition of *New and Nonofficial Remedies*.

\* Letter from the Acting Surgeon General, dated October 17, 1941, in response to a request for a statement of policy from the Planned Parenthood Federation of America. (The only states in which the prescription of contraception by a physician is illegal are Massachusetts and Connecticut.)

dies.<sup>17</sup> This is an important step, designed to protect the public against the use of harmful and ineffective contraceptives.

Clinics for the diagnosis and treatment of sterility have been established in a number of cities in the United States, but none of them is under public health auspices. Most of them are in large hospitals because of the necessity of having laboratory and other facilities available, in order to determine, in each case, what may be the cause of sterility. The diagnosis and treatment of sterility are still in the experimental stage and, until more is known about them, it is unlikely that sterility clinics can be included in public health services. Health officers can and should encourage the study of the problem in those areas where facilities are available, because the existing data concerning the prevalence of involuntary childlessness suggest that between 5 and 10 per cent of all women may be sterile.<sup>18</sup> When the Indianapolis study is completed we shall probably have more reliable data about sterility than are now available.

The control of fertility presents many problems which concern the public health. Maternal mortality and morbidity rates have been greatly reduced within the last few years by careful study and control of obstetrical practices. There remains a group of women, however, for whom pregnancy, even under the best medical supervision, constitutes a hazard to life and health. For the woman in this group it is imperative that pregnancy be prevented until her health is improved and it is no longer hazardous. She is entitled to sound medical advice concerning the means of preventing pregnancy.

The studies reviewed in this article have shown that contraception is widely practised, but that its effectiveness may be considerably increased by expert advice. It is probable that with more

attention to individual preferences in contraceptive methods, effectiveness and acceptability could be increased further.

Women of low economic status with high fertility and high morbidity and mortality rates are those for whom this type of care should be available under public health supervision. The U. S. Public Health Service has declared its willingness to aid such programs when they are initiated by the states. If and when such services are established, their policies should be determined by the results of past research. Plans for service should include continuing research and evaluation, to determine the quality and effectiveness of the service and its broad influence on maternal morbidity and mortality rates.

#### REFERENCES

1. Himes, Norman. *Medical History of Contraception*. Baltimore: Williams & Wilkins, 1936. 521 pp.
2. Notestein, F. W., and Kiser, Clyde V. Factors Affecting Variations in Human Fertility. *Social Forces*, 14, 1:32-41 (Oct.), 1935.
3. Whelpton, P. K., and Kiser, Clyde V. Trends, Determinants and Control in Human Fertility. *Ann. Am. Acad. Pol. & Soc. Sci.*, Jan., 1945, pp. 112-122.
4. Kiser, Clyde V. *Group Differences in Urban Fertility*. Baltimore: Williams & Wilkins, 1942, 284 pp.
5. Pearl, Raymond. Contraception and Fertility in 4945 Married Women. *Human Biology*, 6, 2:355-401 (May), 1934.
6. Stix, Regine K., and Notestein, Frank W. *Controlled Fertility*. Baltimore: Williams & Wilkins, 1940, 201 pp.
7. Stix, Regine K. Birth Control in a Midwestern City. *Milbank Mem. Fund Quart.*, 17, 1, 2, and 4: 69-91; 152-169; 392-423 (Jan., Apr., Oct.), 1939.
8. Stix, Regine K. Contraceptive Service in Three Areas. *Milbank Mem. Fund Quart.*, 19, 2 and 3:171-188; 304-326 (Apr. and July), 1941.
9. Beebe, Gilbert W. *Contraception and Fertility in the Southern Appalachians*. Baltimore: Williams & Wilkins, 1942, 277 pp.
10. Kiser, C. V., and Whelpton, P. K. Social and Psychological Factors Affecting Fertility. *Milbank Mem. Fund Quart.*, 21, 3:221-280 (July), 1943; 22, 1:72-105 (Jan.), 1944; and Kiser, C. V. Personal Communication, Aug., 1945.
11. Pearl, Raymond. Third Progress Report on a Study of Family Limitation. *Milbank Mem. Fund Quart.*, 14, 3:258-284 (July), 1936.
12. Pearl, Raymond. Economic Status, Differential Fertility and Contraception as Observed in the Population of Certain Large Cities of the United States. *Paris Congrès International de la Population*, 1937, pp. 81-95.
13. Stix, Regine K. A Comparative Appraisal of Three Contraceptive Services. *J.A.M.A.*, 118:283-290 (Jan. 24), 1942.
14. Pearl, Raymond. Contraception and Fertility in 2,000 Women. *Human Biology*, 4, 3:363-407 (Sept.), 1932.



15. Stix, Regine K. Gynecological Case-Finding in Maternal Health Clinics. *Milbank Mem. Fund Quart.* 19, 1:36-44 (Jan.), 1941.

16. *Directory of Planned Parenthood Clinic Services.* New York: Planned Parenthood Federation of America, Inc., n.d. 15 pp.

17. Standards for Contraceptive Products Adopted by the American Medical Association. *Human Fertility*, 9, 3:90-93 (Sept.), 1944.

18. Kiser, Clyde V. Voluntary and Involuntary Aspects of Childlessness. *Milbank Mem. Fund Quart.*, 17, 1:50-68 (Jan.), 1939.

#### ADDITIONAL REFERENCES

Beebe, Gilbert W., and Geisler, Murray A. Control of Conception in a Selected Rural Sample. *Human Biology*, 14, 1:1-20 (Feb.), 1942.

Beebe, Gilbert W., and Overton, J. The Contraceptive Service of the Department of Health, City of Nashville. *J.A.M.A.*, 118:1045-1049 (Mar. 28), 1942.

Brown, Wm. E. *Syllabus. An Outline for Teaching the Theory and Practice of Conception Control.* New York: The Medical Department—Planned Parenthood Federation of America, Inc., 1943. 15 pp.

Cooper, Geo. M. Birth Control in the North Carolina Health Department. *North Carolina M. J.*, 1, 9 (Sept.), 1940.

Heberle, Rudolph. Social Factors in Birth Control. *Am. Sociological Rev.*, 6, 6:794-805 (Dec.), 1941.

Cooper, Geo. M., Pratt, Frances R., and Hagood, Margaret J. Four Years of Contraception as a Public Health Service in North Carolina. *A.J.P.H.*, 31, 12:1248 (Dec.), 1941.

Himes, Norman. Medical History of Contracep-

tion. *New England J. Med.*, 210, 11:576-581 (Mar. 15), 1934.

*Laws Relating to Birth Control in the United States and Its Territories.* New York: Birth Control Clinical Research Bureau, 1938. 64 pp.

Norton, Roy. A Health Department Birth Control Program. *A.J.P.H.*, 29, 3:253-256 (Mar.), 1939.

Pearl, Raymond. Potential and Actual Reproductive Performance in Man. *Human Biol.*, 8, 4:508-530 (Dec.), 1936.

Pearl, Raymond. Specific Fertility and Contraceptive Rates in New York City and Chicago. *Am. J. Hyg.*, 25, 3:507-519 (May), 1937.

Pratt, Frances R. Programs for Public Health Nurses in Birth Control Work. *A.J.P.H.*, 30, 9:1096 (Sept.), 1940.

Richardson, Wm. P., and Klaiss, Donald. Pre-venception, the Health Department and the Practicing Physician. *North Carolina M. J.*, 1, 9 (Sept.), 1940.

Seibels, Robt. E. *Pregnancy Spacing in the Rural Public Health.* Columbia, S. C.: The South Carolina State Board of Health, 1942. 20 pp.

Stix, Regine K. Factors Underlying Individual and Group Differences in Uncontrolled Fertility. *Milbank Mem. Fund Quart.*, 18, 3:239-259 (July), 1940.

Vance, Rupert B. The Regional Approach to the Study of High Fertility. *Milbank Mem. Fund Quart.*, 19, 4:356-374 (Oct.), 1941.

Williams, R. C. Post-war Planning for Public Health, New York. *Proc. 24th Annual Dinner Meeting.* Planned Parenthood Federation of America, Inc., Jan. 24, 1945. pp. 5-10.

Winslow, C.-E. A. *Birth Control as a Public Health Problem.* New York: Birth Control Federation of America, Inc. Apr., 1939. 4 pp.

# Comparison of Observed and Expected Deaths in Selective Service Registrants with Negative and Positive Serologic Tests for Syphilis

MURRAY C. BROWN, M.D.

*Director of Medical Education, Meharry Medical College, Nashville, Tenn.*

IT can be assumed that it is desirable for the epidemiologist to measure syphilis in those terms which have gained general usage in the description of other communicable diseases. While the nature and course of this disease have prevented collection of local data for incidence, morbidity, and mortality, attempts to remedy this situation have been reported in the literature. Development of techniques to provide acceptable information which may be used in place of these data has been a matter of concern.

Because syphilis is exceedingly chronic, incidence must be distinguished from prevalence. Techniques for measuring prevalence of syphilis are familiar. The serologic survey, either of an entire population, or of a large sample free from selection, is perhaps the most acceptable method. It is economical and requires no special facilities not generally available. While "serologic syphilis" is not necessarily clinical syphilis, to some extent the degree of error can be measured. It is of no greater significance than the error encountered in other techniques used to measure prevalence.

As a measurement which may be substituted for incidence, or "attack rate," for many demographic purposes, Turner has developed the "discovery rate."<sup>1</sup> The case he presents for this method of measuring syphilis for certain specific purposes is convincing.

It may therefore be said that information of practical value regarding the prevalence and incidence of syphilis may be collected.

Morbidity and mortality are another matter. Of the two, mortality is probably the more important. While morbidity produces economic and social results which are serious, these effects are observed in but a few individuals. Only those patients with late crippling lesions suffer noticeable disability, and they make up no more than 4 to 6 per cent of a syphilis population.

Death from syphilis, either due to late lesions or to acceleration of other disease processes, has seemed the significant factor. If this factor alone could be accurately determined, data concerning incidence and prevalence could be interpreted, and a community profile for syphilis could be developed. From such a profile the local economic, social, and medical significance of syphilis could be determined.

It is distressing to realize that, as Moore<sup>2</sup> observed, we know very little about syphilis as a cause of death de-

NOTE: This paper was prepared from materials collected by the Nashville Venereal Disease Control Program, City Health Department, Nashville, Tenn., during the author's incumbency as director.

spite four hundred years of study. Beyond the simple fact that some individuals die as the result of anatomic damage produced by this disease, little more can be said with certainty. The increased mortality to be expected from introduction of a given number of cases of syphilis into a community cannot be presently estimated with even fair accuracy.

The specific death rate for syphilis as reported in our vital statistics does not provide a measure of the mortality from syphilis in the community. Specific death rates calculated from death certificates cannot be used in a disease which is frequently undiagnosed or incorrectly diagnosed as a cause of death, nor can such rates be used when social and economical implications deter the physician from indicating the disease as a cause of death. The confidential death report<sup>3</sup> has been devised to overcome the reluctance of the physician to indicate syphilis as a cause of death. This technique does not provide accurate death data for it does not compensate for the physicians' failure to recognize syphilis as a cause of death. There is also no means whereby the physician can properly evaluate and report syphilis as a contributing cause of death. The error introduced by these factors is probably excessive.

Schamberg<sup>4</sup> has reviewed the approximately seventy papers on the prognosis of syphilis that make up the modern literature. While many of these were not directly concerned with methods of determining the number of deaths resulting from a given prevalence of syphilis in a community they all dealt with the outcome of infection with syphilis in terms of death. It would seem possible that such a wealth of material would provide sufficient information to make it possible to state with accuracy the number of deaths that should result from a given incidence or prevalence of syphilis. Certainly this is the material which furnishes the basis for statements about the serious nature of syphilis.

A few of the more pertinent papers are presented in Table 1. The difficulties in using the literature for demographic purposes can be inferred from examination of these samples, which are representative of the techniques employed. The careful study of autopsy material by Rosahn and Black-Schaffer<sup>5</sup> is more accurate than demographic methods demand. Unfortunately it cannot be used to estimate the probable outcome of syphilis in a community. The population that comes to autopsy differs from a normal population. It is a hospital population

TABLE 1  
*Selected Studies of Syphilis and Death*

<i>Study</i>	<i>Material</i>	<i>Purpose</i>	<i>Remarks</i>
Rosahn, Black-Schaffer, "Studies in Syphilis" I, II, III	5,300 Autopsies—1917– 1942	Incidence of Syphilis by Age, Sex, Color	Autopsy population Involves selection.
Bruggaard, E.—1929	Untreated syphilis Oslo Clinic	Sequelae of Untreated Syphilis	"More selection than commonly supposed."
Hall, A. F. Under- treatment vs Over- treatment in Syphilis —1935	Life insurance policy holders—1927–1927	Death by Treatment Status and Age	Economic selection.
Uilton and Miner, "Tenative Death Curse for Syphilis ..."	5,203 C.C.G. patients	Life Expectancy—White and Negro Males by age	Selection by Economic status? Sick patients?

\* S. W. T.

in which economic and social selection operates and no correction for these differences can be made.

The study of Bruusgaard<sup>6</sup> on the outcome of untreated syphilis might be usable if we could adjust for the effects of treatment on the prognosis of syphilis in the community. Sowder,<sup>7</sup> however, has destroyed this possibility by his valid criticism of the selection that occurred in Bruusgaard's material.

Hall's analysis of The Actuarial Society's Medical Impairment Study of 1929 contains mortality data for syphilis by treatment status from the experience of all the American insurance companies.<sup>8</sup> If the technical difficulties in using this material could be overcome, the information could not be applied to a community because the material studied was made up of policy holders. Possible economic selection, and the diagnostic techniques employed at the time the observations were made invalidate any conclusions from this study.

Usilton and Minor's study of the Coöperative Clinical Group material<sup>9</sup> indicated that males suffered a shortened life expectancy when they had syphilis. This decreased expectancy was 17 per cent in Negroes and 30 per cent in whites. These findings are expressed as tentative death curves that could be used as a measure of the mortality to be expected from syphilis. Unfortunately the material studied was under observation in a clinic, a factor which involves selection. Table 2 demonstrates the difference which may exist

between a clinic syphilis population and a syphilis population obtained by examining an entire segment of a population. It will be noticed that the percentage of late syphilis with symptoms is approximately 50 per cent higher in the clinic population. Death attributable to syphilis is frequent among individuals with late syphilis. This suggests that mortality studies on clinic populations will exaggerate the rôle of syphilis as a cause of death.

The relationship of late symptomatic syphilis to death from syphilis is so direct that one might argue that the differences in the amount of late syphilis could be used as a correction factor. A correction factor of only 30 per cent applied to the Usilton and Miner figures would indicate that Negro males with syphilis outlive their uninfected fellows, while white males do quite as well in either category!

From these studies, and from the review of the defects of the usual demographic techniques, it is apparent that some as yet unreported method of determining mortality from syphilis must be developed if we are to have information for syphilis comparable to the specific death rate used in other communicable diseases.

Puffer,<sup>10a</sup> Brailley,<sup>10</sup> and other workers studying tuberculosis mortality have encountered similar problems and have developed means for examining mortality in that disease.

Puffer, et al. in 1942, reported a portion of a study of tuberculosis in

TABLE 2

*Distribution of Syphilis by Stage among Nashville Negro Males 18-45  
Clinic Population Compared with a Consecutive Series of Registrants  
Discovered to Have Positive Serologic Test by Selective Service*

	Primary Secondary Per cent	Early Latent Per cent	Late Latent Per cent	Late (With Symptoms) Per cent
626 Registrants	3.9	33.6	58.4	4.1
1,191 Clinic Patients	5.4	27.3	58.0	6.3

Tennessee.<sup>10a</sup> Incidental to one phase of this particular study it was desirable to evaluate the death rates from all causes for the household associates of the tuberculous index cases which were the subject of the investigation. This evaluation was accomplished by comparing the death rates for all causes, among household associates, with the rates prevailing for death from all causes among the similar age, sex, and color populations in the State of Tennessee. The technique employed involved obtaining the aggregate life experience of the household associates. "The average age-specific death rates of the colored population of Tennessee for the 5 year period 1934-1938 were then applied to the life experience of each age group. This procedure gave for each group the 'expected' number of deaths. These 'expected' deaths were compared with the deaths observed in the life experience of the household associates of tuberculous persons." Statistically significant excesses of observed deaths over "expected" deaths could be interpreted as the measures of the hazard introduced by the exposure of the observed population to tuberculosis.

It is reasonable to believe that the aggregate life experience of any population exposed to any unusual hazard of death could be studied by this method and the hazard could be measured by comparing the observed deaths from all causes with the "expected" deaths from all causes.

This method of studying mortality had interesting possibilities. To be applied to syphilis, certain information would have to be available. It would be necessary to have a syphilis population in which individuals could be identified. To accumulate the life experience for the study it would be necessary to know the date of diagnosis of each individual. The individual would have to be followed until he

died, was lost from observation, or until the close of the study period. The time between diagnosis and the close of the observation period would represent individual experience, and the aggregate of the individual experience would constitute the life experience. It would be of vital importance that the syphilis population studied be representative of syphilis in its distribution in the community by stage and degree of treatment, and that no other factor of selection carrying a hazard of death operate in this population which was not operative in the general community.

If these conditions could be fulfilled, any syphilis population which was representative of a statistically defined segment of a community could be studied, and differences found between "expected deaths" and observed deaths could be interpreted as the effect of syphilis in that particular age, sex, and color group.

The method was of particular interest because comparing expected and observed deaths from all causes involves no attempt to diagnose syphilis as the cause of death, yet should indicate the total effect of syphilis as both a contributory and a direct cause of death. In other words, the seriousness of syphilis as a hazard to life might be determined.

Selective Service provided a population which seemed susceptible to study by this method.

Table 3 presents the final distribution of the registrants of 10 Selective Service Boards which serve Nashville and the surrounding county. Registration was completed February 1, 1942. Between that date and February 1, 1944, when preinduction physical examinations were terminated in Tennessee, registrants were examined by local physicians. Each examination included a Standard Kahn test for syphilis, performed in the laboratories of the Tennessee State Department of Public Health. The name,

TABLE 3

*Composition of Selective Service Group  
By Color, Number Serologically Examined, and Deaths  
Ten Nashville Selective Service Boards*

<i>Registrants of 10 S.S. Boards</i>	<i>Total</i>	<i>Per cent</i>	<i>Number Serologically Examined</i>	<i>Per cent of Men Examined</i>	<i>Total Deaths Prior to 2-1-1944</i>
Total	66,037	100.0	33,987 (Est.)	51.4	603
White Only	50,692	76.8	24,000 (Est.)	47.0	328
Negro Only	15,345	23.2	9,987	65.1	275

age, color, address, parentage, and result of serologic test was on record for each man examined, at his Board. In addition the dated results of serologic tests were on record at the main offices of the Tennessee State Department of Public Health, by name, address, race, and age.

Table 3 also includes the number of deaths which occurred among men of Selective Service age who were presumed to be registrants of Nashville Boards, between the dates of respective registrations and February 1, 1944.

It will be seen that 15,345 Negroes made up about 23 per cent of the total registration while the deaths among Negroes were about 44 per cent of the total. Almost two-thirds of the Negro registrants had been examined with a serologic test. The prevalence of serologic syphilis was known from published reports for this area to be about 27 per cent among Negro registrants.<sup>11</sup> It, therefore, could be presumed that a fairly large sero-positive group of Negroes had been discovered by Selective Service examinations. The prevalence of positive tests among white Selective Service registrants was known to be about 4.5 per cent. Therefore, despite the greater number of white males examined it was likely that the positive white males would be only one-third as great in number as were the positive Negroes. The higher percentage of Negroes examined also minimized the possibility that selection for examination would introduce selec-

tive factors which would affect mortality.

The existence of a large and statistically identified sample of the population of Nashville and surrounding county which could be divided into persons with "serologic syphilis" and persons known to have negative serologic tests suggested the experimental application of the principles of the tuberculosis technique to a syphilis population.

It was realized that acceptance of "serologic syphilis" as a measure of prevalence of syphilis would introduce some error. Our own experience indicated that 3 per cent of the persons examined by Selective Service and found to have positive serologic tests for syphilis could be regarded as non-syphilitic after careful clinical study. It was also clear that some few persons with negative serologic tests did have syphilis but the majority of these would represent persons in stages of incubation or latency rather than persons in whom serious lesions were present. These errors compensated each other to some extent, and in any case did not seem great enough to contraindicate the study.

When the experimental method was developed it also became clear that it would be impossible to substitute careful diagnostic study of each case for the serologic test as a criterion for diagnosis. Despite the use of legal measures to support persuasion some persons could not be brought in for examina-

tions. This last factor decreased the size of the sample and introduced the same type of error demonstrated to exist in clinic populations by Table 2. While study of prognosis by the stage of disease would have been of clinical interest, it was not possible under the conditions.

It was also impossible to study the outcome by amount of treatment received. The same factors operated here. The sample would have been distorted by the conditions which would have made detailed histories possible. It is also true that the sample was too small for subdivision.

These are not serious objections. Specific death rates for other diseases reflect the quality of treatment that prevails in the community. The stage of disease is not of great importance except in clinical studies, and our interest was confined to the outcome of syphilis in whatever distribution by stage existed in our community. For our purposes, it seemed that the answer to be expected from study of the population described would be satisfactory.

In planning the study it became evident that no additional labor would be involved if mortality among the entire group of Negro registrants was studied; so plans were made to determine experience and observed deaths for the men with negative tests for syphilis and for the men who were not examined as well as those with positive tests.

Criteria were set for the determination of experience. Experience for the whole group was to begin with Selective Service registration and was to terminate on February 1, 1944.

Total registrants for each registration were drawn from the board records, and age distributions by usual 5 year periods were calculated from 1940 U. S. Census data. Men in each registration were credited with the months of experience between registration and February 1, 1944, and the totals calculated

as person-years of experience in the respective age groups.

The experience for the blood tested group was to start with the date of first serologic test by Selective Service and to terminate on February 1, 1944. Men sent to the army after this date were not given serologic tests by Selective Service. This information was collected by recording the date of serologic examination by the number of months it antedated February 1, 1944. The total person-months of experience were calculated from this material. Registrants were classified by the result of the *first* serologic test taken by the Selective Service System.

In order to confine the study to civilian experience, both deaths and experience occurring after induction were excluded. This was necessary because death hazards in the army are not comparable to those encountered in civilian life. Experience lost due to induction was calculated from date of induction of each registrant to February 1, 1944. This was charged to the proper group by result of serologic examination.

Deaths for the whole group were obtained by abstracting the resident and nonresident death certificates for Nashville and the surrounding county from October, 1940, to February, 1944, for the Selective Service age group. These were supplemented from the records of each Selective Service Board, clinic information and other sources. A death was chargeable to the Selective Service group only when positively identified by comparison of death certificate and the registrant's file in the Selective Service Board. The death was assigned to the proper group on the basis of the first serologic test reported on the Selective Service physical examination record.

All determinations were done on an age-specific basis by years. Ages on death reports were adjusted to age at time of serologic test. Source material

TABLE 4

*Serologic Tests for Syphilis by Age Groups and Result of Test*  
*9,834 Negro Selective Service Registrants of Nashville Area*  
*October 1940-February 1944*

Age	Total	Positive		Negative		Doubtful	
		Number	Per cent	Number	Per cent	Number	Per cent
Under 20	894	122	13.6	766	85.7	6	0.7
20-24	2,618	559	21.4	2,018	77.1	41	1.6
25-29	2,208	611	27.7	1,554	70.4	43	1.9
30-34	2,135	722	33.8	1,350	63.2	63	3.0
35-39	1,387	489	35.3	860	62.0	38	2.7
40-44	592	216	36.5	364	61.5	12	2.0
Total	9,834	2,719	27.6	6,912	70.3	203	2.1

included quadruplicate laboratory forms in the Tennessee Department of Public Health, Selective Service Board induction records, and the files for individual registrants in each board.

The first information tabulated for the entire study was the result of serologic tests of Negro registrants by age and result of test. This information is contained in Table 4. The total per cent positive agrees closely with the previous reports for Negro males in Nashville.<sup>11</sup> The slight excess, 27.6 per cent compared to 26.8 per cent reported previously can be accounted for by the inclusion of more men between 35 and 44 years in this sample. The size of the negative and positive populations available for study is shown by age group. Aside from the small numbers for the extremes of age, the number of men is relatively even and of a size permitting analysis, provided experience per man is adequate. The rates for sero-positivity increase on a smooth curve for age—a result which was expected.

The information on deaths became available while experience was still being determined. It was disturbing to discover that, of 275 deaths occurring among Negro registrants, only 92 occurred among men who had been serologically examined. It was recognized that experience per man in the unexamined group far exceeded the experi-

ence per man in the examined portion, but the latter group was twice as large. The collection of twice as many deaths in the smaller group at once raised the possibility that the selection of men for blood testing introduced a serious sampling error. Examination of the death certificates showed no marked dissimilarity between the distribution of causes of death in either group. All death certificates were then checked against the respective registrant's Selective Service file to see if any had been excluded from examination on the basis of known physical defects. No selection on physical grounds was demonstrated.

Table 5, which presents the result of calculating death rates for all causes for the Selective Service registrants with negative serologic tests and for the entire group of Negro registrants, supports the belief that no such selection occurred.

The rates derived are irregular, but by removal of the extreme age groups in which the number of men was very small and for which experience is obviously inadequate, much of this uneven gradient disappears. These death rates are compared with statewide rates for Tennessee Negroes. The difference in total rates for each of these three populations is seen to be small. The lowest rate is that for the entire Negro Selective Service population



TABLE 5

*Death Rates for Negro Males by Age*

*All Negro Registrants Compared with Registrants with Negative S.T.S. and with Tennessee State Rates; Including Actual Deaths and Experience for Nashville S.S. Area*

Age	Registrants with Negative S.T.S.			All Registrants			Tenn. 1942 Rate
	Deaths	Experience	Rate	Deaths	Experience	Rate	
Under 20	4	183	21.3	12	2,009	6.0	4.4
20-24	7	1,726	4.1	44	8,799	5.0	7.7
25-29	15	1,412	10.6	60	8,050	7.5	7.7
30-34	13	1,172	11.1	73	7,220	10.1	8.5
35-39	6	724	8.3	47	5,961	7.9	12.1
40-44	4	403	9.8	35	3,405	10.3	12.1
Total	49	5,630	8.7	271	35,444	7.6	8.4

which indicates that selection of low risk persons for blood testing probably did not occur. The mean age for each total group is similar.

The sex, age, color-specific Tennessee state rate<sup>12</sup> is similar to the experimental rates in Table 5 but shows an even gradient from younger to older ages. The stability of this rate is of course due to the large experience on which it is calculated, and the instability of the experimental rates reflects the small experience from which they are derived.

Table 6 presents the results of applying the Tennessee State age-specific death rate for Negroes to the experience in both the negative and positive Selective Service populations to determine the number of deaths expected for each group. Both experimental populations exclude the 350 years' experience for 208 men with doubtful blood tests.

This experience resulted in no deaths, and its exclusion does not affect the results materially.

These expected deaths are compared with the actual number of deaths experienced in each experimental group. The negative group shows exactly normal mortality while there is a slight excess mortality for sero-positive registrants. This excess lies well within limits of pure chance occurrence. Age 45 was excluded from Table 6 for convenience in both groups, and contains one sero-positive death. Adding this death to the total deaths of sero-positive registrants will not make an observed difference in mortality which is significant.

Among the deaths syphilis is not once reported as the cause of death, or the contributory cause of death, for a serologically examined man. One death certificate for a sero-positive man states

TABLE 6

*Deaths S.T.S. Positive and Negative Negro Registrants  
With Expected Deaths by Tennessee State Rates  
Including Experience for Nashville Selective Service Area*

Age	S.T.S. Positive		Expected Deaths Tenn. Experience (1942)	S.T.S. Negative		Expected Deaths Tenn. Experience, 1942
	Experience Man-Years	Deaths Actual		Experience Man-Years	Deaths Actual	
Under 20	113	1	2.4	188	4	0.8
20-24	976	8	4.0	1,726	7	13.3
25-29	1,099	9	11.6	1,412	15	10.9
30-34	1,056	12	11.7	1,172	13	10.0
35-44	951	12	8.0	1,132	10	13.7
Total	4,215	42	27.7	5,530	49	48.7

aortic regurgitation and uremia as the cause of death. This of course cannot be distinguished from aortic regurgitation from rheumatic fever but was presumably of syphilitic origin.

Reports for registrants with negative serologic tests include one death of a known syphilitic in the 25-29 year age group. Search of hospital, clinic, and morbidity reports for recent years revealed no other deaths involving clinical syphilis in this group.

Two deaths in the sero-negative group may have been due to syphilis but probably were not. Organic heart disease was reported on one death certificate, and cerebral hemorrhage on the other.

Autopsy was performed in several instances among the unexamined registrants, but no autopsies are reported for either sero-positive or sero-negative cases.

Search for previous clinical records for dead men in the group with no serologic examination revealed a total of 35 deaths with previous clinical diagnoses of syphilis. Thus 19 per cent of the dead not examined by Selective Service were known to have syphilis. While the point can be determined, no check has been made to determine the number of sero-positive living men who were known to treatment agencies prior to examination by the Selective Service Board.

The positive and negative men show no gross difference in physical status. The percentage of sero-negative men deferred on physical grounds is similar to the percentage of men classified "4-F" for causes other than syphilis in the sero-positive group.

#### DISCUSSION

It will be possible to continue observation of this population for several years. The serological examinations by local boards are now concluded, so information about this population from

that source is complete. Future experience can be accumulated without repeating the more laborious portion of the study. Two things limit the time for which the present data will have value. The occurrence of new syphilis in this group may be expected to assume such serious proportions in a few years that the sero-negative population will no longer be a control, nor the sero-positive population representative of syphilis in the portion of the community studied. The other limitation will be the change in residence which will inevitably occur and which will conceal deaths among this population. This is not serious until sufficient time elapses to make these registrants residents of their new community. Two or three years will be required to produce these changes, and possibly they will not occur for five years.

While the difference in mortality found in favor of serologic syphilis is not significant, when this is converted into a death rate a figure of 106 deaths per 100,000 is obtained. If the true specific death rate for syphilis among Negroes 18 to 45 is of this order, syphilis carries a serious hazard for young Negro males. The death rate for cancer among Negroes of all ages in Nashville is only 151 per 100,000. To reach a significant difference in mortality in the experience studied, a death rate exceeding 200 per 100,000 for age 18 to 45 is required.

The method presented is most adaptable to large populations with high prevalence rates for syphilis. States in which serologic testing was part of the Selective Service registration procedure already have accumulated two and one-half times as much experience for the positive portion of their 21-35 year registrants as was accumulated in Nashville through January, 1944. It is possible that significant differences could be determined in these states now, while in states with universal blood

testing laws the opportunity exists, by correct design of the serologic form, to identify the entire population in a manner which will permit the relation of deaths to the serologic status of the dead person.

#### SUMMARY

The study of deaths in syphilis presents a real challenge. Present information is extremely limited, both by the nature of the disease and social implications which deter physicians from indicating this cause of death on death certificates. Specific death rates, applicable in other communicable diseases are deficient when applied to syphilis. Other methods of studying death have not been satisfactory for demographic purposes.

The deaths occurring among 15,345 Negro registrants in Nashville's ten Selective Service Boards have been studied. Deaths experienced among the sero-negative and sero-positive portions of this group have been compared with the expected deaths as calculated from Tennessee age, sex, and color-specific death rates for all causes.

The material is presented in order that the method used for collecting the information may be examined. The study was limited to civilian experience and civilian deaths to exclude the uncertain death reporting and unusual hazards encountered in the army. The Negro portion of the registrants in Nashville was analyzed because the group is small and syphilis is extremely prevalent in that group.

The results of the experimental study of Negro registrants are not conclusive. Some excess mortality was found in the sero-positive group. This excess does not approach the proportions of the possible error due to chance. The short experience of the small group of men studied made it unlikely that other results would be found. The method

applied is such that future experience can be accumulated with little effort, and it is possible that restudy will provide conclusive evidence of the effect syphilis has upon mortality.

Material presented includes the final results for serologic examinations performed on Negro registrants of Nashville by Selective Service. Tables of death rates for sero-negative, sero-positive, and all Negro registrants of Nashville's ten Selective Service Boards are presented which indicate that factors of selection of Negro males for blood testing did not seriously distort the mortality information.

#### REFERENCES

1. Turner, T. B. Studies on Syphilis in the Eastern Health District of Baltimore City, I and II. *Am. J. Hyg.*, 37:259-288, 1943.
2. Moore, J. E. Unsolved Clinical Problems of Syphilology. *Am. J. Syph., Gonorr., & Ven. Dis.*, 23:701, 1939.
3. Nicoll, M., and Bellows, M. T. Effect of a Confidential Inquiry on the Recorded Mortality from Syphilis and Alcoholism—A Survey in the Westchester County Health District. *A.J.P.H.*, 24:813, 1934.
4. Schamberg, I. L. The Prognosis of Syphilis, A Critical Review of Clinical, Autopsy, and Life Insurance Studies. *Am. J. Syph., Gonorr., & Ven. Dis.*, 29:529, 1945.
5. Rosahn, P. D., and Black-Schaller, B. Studies in Syphilis. I—Review of Incidence of Syphilis in Autopsies on Adults. *Arch. Int. Med.*, 72:78, 1943. II—Methods of Analysis of Yale Autopsy Protocols. *Yale J. Bio. & Med.*, 15:575, 1942-43. III—Mortality and Morbidity Findings in the Yale Autopsy Series. *Ibid.*, p. 587.
6. Bruusgaard, E. Über das Schicksal der Nicht Spezifisch Behandelten Luetiker. *Arch. Dermat. & Syph.*, 157:309, 1929.
7. Sowder, W. T. Interpretation of Bruusgaard's Paper on the Fate of Untreated Syphilitics. *Am. J. Syph., Gonorr. & Ven. Dis.*, 24:684-691, 1940.
8. Hall, A. F., Jr. Under-treatment Vs. Over-treatment of Syphilis. *J. Indiana M. A.*, 28:586, 1935.
9. Usilton, L. J., and Miner, J. R. A Tentative Death Curve for Acquired Syphilis in White and Colored Males in the United States. *Ven. Dis. Infirm.*, 17-18:231, 1936-7.
10. Brailley, Miriam. A Study of Tuberculous Infection and Mortality in the Children of Tuberculous Households. *Am. J. Hyg.*, 31 (Sect. A): 1, 1940.
- 10a. Puffer, Ruth K., Gass, R. S., Murphy, W. J., and Williams, W. C. Tuberculosis Studies in Tennessee. *Am. J. Hyg.*, 35:567, 1942.
11. Williams, W. C., and Puffer, R. R. The Results of Serologic Tests for Syphilis Among Selective Service Registrants in Tennessee. *J. Tennessee M. A.*, 35:421-425, 1942.
12. Tennessee Department of Health files.
13. The Actuarial Society of America. Medical Impairment Study, 1929. The Society, 1931.

# Development of a Community Rheumatic Fever Program

BERNICE G. WEDUM, M.D.

*Denver Area Rheumatic Fever Diagnostic Service and Department of Medicine, University of Colorado School of Medicine, Denver, Colo.*

THERE are indications that coördinated programs designed to meet all needs of the patient with rheumatic fever are favorably influencing morbidity and mortality<sup>1, 2</sup> although clear-cut proof is lacking.<sup>3</sup> Unfortunately most plans begin before the local prevalence of the disease is accurately determined. Lack of this knowledge will make future evaluation difficult. Although it is not yet known with certainty whether rheumatic fever programs are preventing illness or prolonging lives, substitution of good management for the neglect or over-protection which frequently characterizes the handling of these children is enough to make such programs worth while.

There have been recommendations by various groups that all components of a program be available before one is initiated.<sup>4</sup> This is greatly to be desired but in many areas it is not possible. The great lack is usually beds for long-term convalescence. There seems to be little doubt that institutional convalescent care or hospital schools give the best results with most bedridden rheumatic children.<sup>5, 6</sup> Yet this lack need not necessarily deter the inauguration of a program. Home care will be all that will be available in many areas for some time to come. The nature of rheumatic fever is such that individuals of all income levels must be reached. Even after the provision of convalescent beds many children will

still receive care in their homes. There are other benefits derived from a rheumatic fever program even without an adequate foster or convalescent home. These include case finding, observation of siblings, home teaching, vocational guidance, follow-up in the schools, lay and professional education, and restoration to normal life of the child incorrectly labeled rheumatic.

In the discussion which follows an attempt will be made to show how a community may be organized when all the components of a complete rheumatic fever program are not present. The activities described below focus attention on the missing elements and stimulate the community to provide them.

## ORDERLY EVOLUTION OF A RHEUMATIC FEVER PROGRAM

In order to interest a few key people in the beginning, certain publications are of value.<sup>2, 7-12</sup> A brief summary of the operation and results of the London County Council Rheumatism Scheme<sup>7</sup> with preliminary analysis of the facilities and needs in the community is also helpful.

## PREVALENCE STUDIES

There are several publications which summarize for rheumatic fever its importance as a cause of death in children,<sup>2, 7</sup> its prevalence in school children,<sup>13, 14</sup> and the prognosis.<sup>15-17</sup> These general statistics are helpful, but the figures which carry the most

weight are those which apply to the specific community involved. There are two presentations which are very effective. One is a table showing the principal causes of death in children aged 5 to 19 in the city and state concerned. This can easily be obtained by calculation from the U. S. Bureau of the Census records.<sup>18</sup> Rheumatic heart disease is the first cause of death among school children in many areas. A second presentation may show the comparative standing of the city and state. For example, in 1939-1940 Denver had the second highest mortality rate in children among the 25 largest cities in the United States. In this connection Hedley's figures for 1922-1936<sup>19</sup> can be used as well as current census reports.

Prior to the initiation of the program it might be well to determine the amount of hospitalized and convalescent rheumatic heart disease, rheumatic fever and chorea in the community. Such a survey will arouse interest and provide another base line for future comparison.

Another preliminary procedure of value is the determination of the prevalence of rheumatic heart disease in a representative sample of school children.<sup>7, 13</sup> Such a study can be of great value in estimating the effect of a rheumatic program if repeated after 5 or 10 years. Ideally a nearby group of children which is not to receive the benefits of the program is also surveyed to serve as a control group. The principal difficulty lies in securing the services of a physician trained in the study of heart disease in children. One solution is to have this survey done by the physician who will do all or the major portion of the clinical work in the proposed rheumatic fever program. The health department of the public schools might employ such a physician part time for about 6 months prior to opening of the diagnostic services. Such

studies furnish good material for local statistics of prevalence, establish a good working relationship with the doctors and nurses in the public schools, and provide a group of cases with which to start the diagnostic service.

A complete report may then be written which outlines the local problem, the ideal program, the facilities available in the community and how they can be adapted to the need.

#### DIAGNOSTIC AND CONSULTATIVE SERVICES

Diagnostic and consultation services are the first requirement so that the children who are to receive the benefits of the program are accurately identified. The diagnosis in many cases requires laboratory, x-ray, and electrocardiographic procedures which are beyond the means of the average individual, and beyond the equipment of many physicians. Another matter to consider is that many children are erroneously diagnosed as having rheumatic fever or heart disease because of the presence of a few leg pains at night or a functional systolic murmur. It is as important to remove the rheumatic label from these children as it is to identify the child who has the disease.<sup>20</sup>

The health service of the public schools can play a major rôle in launching a diagnostic service. In the course of school health examinations a number of children are found who are thought to have heart disease. Indigent patients in this group can be the first studied. Children who have a physician are seen after the latter's permission has been obtained by the school health service. Later patients will be referred directly by physicians, public health and visiting nurses, clinics and other agencies. In every case a report of the findings should be sent to the source of referral and a copy to the school health service. A child with rheumatic fever or other condition is

directed to medical supervision, if he is not under care, or referred back to his own physician.

#### A RHEUMATIC REGISTER

An accurate rheumatic register automatically evolves from the activities of a diagnostic service. This register has the names of children who are to receive a coördinated program of care and follow-up as described below. The superiority of a rheumatic register to a list obtained by reporting has been discussed elsewhere.<sup>20</sup> When a diagnostic service is available to which any child with manifestations suggesting rheumatic fever can be sent for study, the physician receives a report which is a valuable aid in the management of his patient. At the present time, in most localities, reporting the disease is usually an additional piece of paper work for which the physician receives nothing in return, while health authorities receive the name of a child who may or may not have rheumatic fever.

#### EDUCATION

Parallel with the development of diagnostic services, a program of professional education may be instituted. Physicians should be reached first. Such education can take the form of a refresher course with outside speakers invited, an abstract service for physicians, a series of articles on the manifestations, differential diagnosis and treatment of rheumatic fever appearing in a local medical journal, and "rheumatic fever nights" at meetings of the medical society. The activities of the diagnostic service are in themselves a potent form of education.

Many errors in diagnosis and treatment are being made. One notable one is the frequent use of the sulfonamide derivatives in the treatment of acute rheumatic fever, which has been shown by several investigators to be not only ineffective but harmful.<sup>21,22</sup> The

articles published on this point simply have not reached many overworked doctors. It has been our experience that the great majority of busy physicians welcome such information if it is given in dignified and understanding fashion. It must be borne in mind that there is no disease in which the so-called physician-patient relationship is more greatly needed than in rheumatic fever. These children and young people must have a family doctor to whom they can refer for supervision and guidance, and this individual must have at his disposal expert consultation, up-to-date information, and coördinated facilities for care.

The same program of education should be instituted among nurses. This professional group is usually aware of the rheumatic fever problem, but many are not familiar with slight signs of activity, and fine points of nursing care both in the hospital and in the home. In a similar manner all groups concerned with the care of the rheumatic child, including social workers, home teachers, dietitians, and occupational therapists should be reached.

Only after the professional groups are educated should much attempt be made to reach the lay public. It is usually an error to arouse the public to a need before professional groups are ready to cope with it. Materials which can be obtained from the Metropolitan Life Insurance Company, the Children's Bureau, and the American Heart Association are invaluable.

#### COÖRDINATION

Coördination of the agencies already existing which can supply care follows education of professional groups. A "nerve center" is needed through which all activities concerning the care of rheumatic children are integrated. No effort can be made to coördinate the services offered by the groups mentioned above until one is certain that these

groups are familiar with the special problems of rheumatic fever. For example, injudicious management of the child with slight cardiac damage can create a mental invalid. Education of these professional groups should precede coördination.

It is suggested that if no effort of this nature has been made previously or if confusion and overlapping of agencies exist, a small "pilot plan" of coördination be tried unofficially, enlisting the aid of a few interested family physicians and clinics and involving not more than 20 or 30 children. In this manner the kinks can be ironed out on a small scale before such service is offered widely.

This center must be one with which the private physician can quickly make any arrangements for home care, one through which reports can be efficiently transmitted, and where the rheumatic register will be maintained. Eventually these activities will probably be a part of municipal or state health departments. They will, however, range all the way from a small part of the duties of one public health nurse, working in a county where rheumatic fever is not very common, a part of the function of a diagnostic service in a moderate sized community, to a separate complex organization in a city of a-half million or more. This center acts as a clearing house for all those associated with the management of the rheumatic child.

#### FOLLOW-UP

This function falls logically to the school health service. In each school should be a file of rheumatic children and their siblings. Such children are reminded to visit their physicians every six months, are observed at intervals for slight manifestations of rheumatic activity and receive health educational material. Education is carried on through parent-teacher associations. Only some of the many possibilities are

mentioned.<sup>9</sup> If this has not been tried previously it might be attempted in one school and, when running smoothly, put into effect throughout the entire school system.

Children with a clear-cut history of rheumatic fever or with obvious rheumatic heart disease, on whom the family doctor and the school physician agree are not always seen in the diagnostic service unless there is a problem. They should be reported to the coördinating center and added to the rheumatic register.

With the background of a community awakening to the rheumatic fever problem, efforts can be made to obtain those parts of a program which are lacking. For example, in Denver a large sum of money was given for a convalescent home partly as a result of the stimulus of a rheumatic fever program.

#### PROBLEMS ENCOUNTERED

In setting up a rheumatic fever program it is necessary to have (1) one or two, or a few individuals with special knowledge of the disease who are willing and eager to devote a great deal of time to the project, and (2) a local sponsoring agency. In each community this agency will differ, depending on its strength, composition, and influence. A program sponsored by an outside agency lacks the local pride and enthusiasm so important for success. If an outside mode of organization is necessary, the sponsorship of a local community group should be enlisted as soon as possible.

A difficulty may arise if the sponsoring group undertakes the formulation of the program. The program can be formulated only by those thoroughly familiar with the disease. An example may be cited: A sponsoring group contemplated the creation of a diagnostic service where one of the rules was that each child be seen only once.

This reasoning by analogy with local tuberculosis diagnostic clinics would not apply to rheumatic fever, as those familiar with the disease know. However, once the sponsoring agency understands what is needed, its knowledge of local persons and situations frequently makes it better able to solve the problems involved in launching a program.

In drawing up the detailed plan of organization, rules of procedure, eligibility, and budget, much can be learned by studying published reports<sup>10, 20, 23-25</sup> and by writing for sample forms and charts.

In selection of the personnel for a diagnostic service, certain points are of great importance. Inevitably a great amount of attention centers around the heart. The individuals responsible for the evaluation of these children must have good ears, regardless of their specialty. The recognition of the rheumatic state is ultimately clinical, and at least one physician should have considerable experience with rheumatic children at all stages of the disease. A diagnostic service should never become simply a screening or classification center where the examination is carried only to the point of determining whether or not the child has rheumatic fever or heart disease. Aside from detracting from the quality of the examinations performed, there is a very practical reason in that it is frequently impossible to state that a child does not have rheumatic fever unless one can explain his symptoms on some other basis. A combination of an internist, a pediatrician, and one physician specially interested in rheumatic fever provides a team whose members supplement one another well.

Every effort should be made to obtain the services of the best trained people the community can offer. It frequently happens that individuals who are "naturals" as far as cardiology is

concerned are not suited by inclination or temperament to be contact men in a political sense for a large rheumatic fever program; and the reverse is even more commonly true. Rarely these qualities are combined in one person. If not, two or more individuals must work together in the capacities best suited to them. A diagnostic service needs somewhere in its organization a physician who has the confidence of the great majority of doctors in the community, regardless of his special knowledge of rheumatic fever.

A few other points may be mentioned briefly. It is suggested that the diagnostic service conform to the standards for a Cardiac Clinic as outlined by the American Heart Association. The physician actually running the service should have adequate authority and responsibility, including the selection of other clinic personnel. It is wise to give a physician working full time in a rheumatic fever program consultation privileges to avoid losing such individuals just as they become of great value. Such a service may be a center of research and clinical training for interested doctors, especially school physicians. Residents, internes, medical students, and student nurses should be included if the service is located in a medical school.

The official approval of the local county medical society is very desirable. Because of the feeling concerning "socialized medicine," any program dealing with private patients is likely to be viewed with distrust initially, but with proper operation of the service this will be replaced by confidence and appreciation. The principle of free choice of medical care should guide the operation of the service.

When coördination of facilities for care is considered, a problem may arise in the form of weak or faulty local health organization so that the agency which might logically take on this function is



not suitable. It may be necessary for some other department to serve. The actual persons involved are really of the greatest importance. It is best initially to have such activities carried on by those who have deep interest in the rheumatic fever program, with a record of accomplishment and the confidence of the community regardless of their official connection.

When a rheumatic fever program is started for children it may be difficult to expand it to include young adults. The high incidence of rheumatic fever among members of the armed forces<sup>29</sup> indicates that, in the future, programs should not be inaugurated without including these young adults. It is disturbing to see persons in their twenties walk into a clinic with the arthritis of long undiagnosed rheumatic fever and associated well developed heart disease.

#### FUNDS

Sources of funds for these programs include federal,<sup>30</sup> state, and municipal governments, the community chests, and a large number of benevolent organizations. The financing of a local program can be done either entirely by one organization or by several working jointly. Rheumatic fever deserves as prominent a place in the public eye as tuberculosis, poliomyelitis, and cancer. An American Council on Rheumatic Fever has recently been formed.<sup>31</sup> Possibly at some future date rheumatic fever will be included in a nation-wide campaign to raise money to combat all forms of heart disease. Ultimately such an organization would conform to whatever solution is finally made of the problem of large numbers of volunteer agencies competing with one another for community support.<sup>32</sup> The situation will vary so with different cities that only general statements can be made. However, it is suggested that rheumatic fever be included in the health activities of every community

chest. Among other groups who have aided are tuberculosis associations, the American Legion, Lion's Clubs, and Parent-Teacher Associations.

#### SUMMARY

1. Although it is desirable to have all components of a complete rheumatic fever program before one is inaugurated, in many areas this is not possible. It is suggested that plans be initiated, utilizing and perfecting what facilities are available. The operation of a program is an effective means of focusing attention on the components which are not present, and stimulates a community to provide them.

2. A rheumatic fever program may evolve in the following manner:

1. Prevalence studies
2. Diagnostic services and rheumatic register
3. Education of professional groups
4. Coördination of services already available
5. Education of the lay public
6. Organized efforts to obtain facilities not available

Certain parts of this program and problems that may be encountered are discussed in detail.

3. Young adults as well as children need the benefits of a rheumatic fever program.

4. All income levels should be served. Most rheumatic fever is seen by the family physician who requires at his disposal expert consultative and diagnostic services and coördinated facilities for care.

#### REFERENCES

1. Bach, F., Hill, N. G., Preston, T. W., and Thornton, C. E. Juvenile Rheumatism in London. *Ann. Rheumat. Dis.*, 1:210, 1939.
2. Swift, Homer F. Public Health Aspects of Rheumatic Heart Disease: Incidence and Measures for Control. *J.A.M.A.*, 115:1509, 1940.
3. Ash, Rachel. Rheumatic Infection in Childhood: Influence of Type of Onset and Calendar Year of Onset. *Am. Heart J.*, 22:439, 1941.
4. Huse, Betty. British Recommendations with Regard to Children with Rheumatic Fever. *The Child*, 9:57, 1944. Also The Care of Rheumatic Children: Report by the Cardiac Society and British Paediatric Association. *Arch. Dis. Childhood*, 19:96, 1944.

5. Stroud, W. D., and Twaddle, P. H. Fifteen Years' Observation of Children with Rheumatic Heart Disease. *J.A.M.A.*, 114:629, 1940.
6. Wedum, B. G., and Wedum, A. G. Rheumatic Infections in Cincinnati Hospitals: II. Convalescent Facilities and Needs. *Cincinnati J. M.*, 23:497, 1942.
7. Paul, John R. *The Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects*. Published for the American Heart Association by the Metropolitan Life Insurance Company, 1943.
8. Armstrong, D. B., and Wheatley, G. M. Community Organization for the Control of Rheumatic Fever. *New York State J. Med.*, 45:169, 1945.
9. Wheatley, G. M. Potentialities in the School for Rheumatic Fever Control. *New York State J. Med.*, 43:1947, 1943.
10. Galvin, Louise F. The Virginia Program for Children with Rheumatic Fever. *The Child*, 6:164, 1942.
11. Proceedings of Conference on Rheumatic Fever. Washington, D. C., October 5-7, 1943. U. S. Dept. of Labor. *Children's Bureau Publ.* 308.
12. Huse, Betty. Rheumatic Fever in Children. *The Child*, 7:158, 1943.
13. Wedum, B. G., and Wedum, A. G. Prevalence of Rheumatic Heart Disease in Denver School Children. *A.J.P.H.*, 35, 12:1271 (Dec.), 1945.
14. Dublin, Louis I. Heart Disease and Public Health. *Am. Heart J.*, 23:16, 1942.
15. Wilson, May G. *Rheumatic Fever*. New York: The Commonwealth Fund; London: Humphrey Milford, Oxford University Press, 1940.
16. Jones, T. D. Rheumatic Fever and Heart Disease: Completed Ten-Year Observations on 1,000 Patients. *Tr. Assn. Am. Phys.*, 57:267, 1942.
17. Martin, A. T. Twenty Years' Observation of 1,438 Children with Rheumatic Heart Disease. *J.A.M.A.*, 117:1663, 1941.
18. *Vital Statistics of the United States*. Parts I, II and III. U. S. Dept. of Commerce, Bureau of Census. *International List of Causes of Deaths*: Numbers 58, 90a, 92b, 92c, 93c, 95b.
19. Hedley, O. F. Trends, Geographical and Racial Distribution of Mortality from Heart Disease Among Persons 5-24 Years of Age in the United States During Recent Years (1922-1936). *Pub. Health Rep.*, 54:2271, 1939.
20. Rutstein, David D. The Role of the Cardiac Clinic in the Rheumatic Program. *J.A.M.A.*, 126: 484, 1944.
21. Swift, H. F., Moen, J. K., and Hirst, G. K. The Action of Sulfanilamide in Rheumatic Fever. *J.A.M.A.*, 110:426, 1938.
22. Massell, B. F., and Jones, T. D. The Effect of Sulfanilamide on Rheumatic Fever and Chorea. *New England J. Med.*, 218:876, 1938.
23. Henske, J. A. State Rheumatic Fever Program for Children. *Nebraska M. J.*, 30:160, 1945.
24. Bacal, H. L., and Struthers, R. R. The Organization of a Rheumatism Service. *Canad. M. A. J.*, 38:227, 1938.
25. Peeples, G. S. T. The Rheumatic Fever Program in South Carolina. *J. South Carolina M. A.*, 40:205, 1944.
26. Hiss, J. G. F. A Plan for Rehabilitation for Rheumatic Subjects. *J. Pediat.*, 26:230, 1945.
27. Hall, C. H. The Rheumatic Fever Program in Oklahoma. *J. Pediat.*, 26:259, 1945.
28. Dwan, P. F. The Rheumatic Fever Program in Minnesota. *J. Pediat.*, 26:250, 1945.
29. Holbrook, Col. W. Paul. The Army Air Forces Rheumatic Fever Control Program. *J.A.M.A.*, 126:84, 1944.
30. *State Programs for Care of Children with Rheumatic Fever Under the Social Security Act*. Title V, Part 2. U. S. Department of Labor, Children's Bureau, 1944.
31. Wheatley, G. M. Mobilization Against Rheumatic Fever. *J. Pediat.*, 26:237, 1945.
32. Gunn, S. M., and Platt, P. S. *Voluntary Health Agencies, An Interpretive Study*. New York: Ronald Press, 1945.

## You Can't Pigeon-Hole Health

"Low income, bad housing and environment, ignorance, high incidence of sickness and mortality, low income—all these continue endlessly in a vicious circle. Health agencies must learn, as welfare agencies have been learning, that these recognizable defects of the common life cannot be remedied by themselves. It is not contended that a health agency can affect the wages of unskilled workers, nor remove them from slums, nor give them basic education. But it is significant that organizations whose purpose is to promote health and to prevent disease should give so little attention to these basic

conditions. This is understandable only on the assumption that close devotion to the immediate demands of their specialized task shuts from them all awareness as to the other essentials of wholesome living. A vigorous and vital national health council, having as its objective the building of health to the highest point possible, would have to take cognizance of these basic factors and could at least add its voice to those calling for opportunity for fuller life for all the people."—Gunn, Selskar M., and Platt, Philip S. *Voluntary Health Agencies*. New York: Ronald Press, 1945. 364 pp. \$3.00.

# Experiences with Rheumatic Fever in the Army Air Forces

CHARLES A. R. CONNOR, M.D.\*

*Instructor in Medicine, New York University College of Medicine, New York, N. Y.*

THIS paper reviews some of the experience of the Army Air Force Rheumatic Fever Control Program. It treats briefly the relationship of rheumatic fever to group A streptococcal infections; chemoprophylaxis; therapy in the acute phase; and a new concept in the management of the convalescent phase.

No accurate statistics on the incidence of rheumatic fever in this country are available. An obvious reason for this state of affairs is the lack of specific knowledge of the etiology and also the lack of a specific diagnostic test. Since the clinical syndrome rheumatic fever presents a variety of signs and symptoms, none of which are pathognomonic, a positive diagnosis depends upon the critical evaluation of these data.

In our studies we were confronted with two major difficulties in the consideration of this diagnosis in atypical forms of the disease. The first was the reluctance to make such a diagnosis, because of the possible effect on the patient's future emotional and psychological well-being, as well as on his future insurability and employability.<sup>1</sup> This conservative attitude may be commendable, in view of the undue emphasis in some educational programs on the serious sequelae of rheumatic fever, but it prevents standardization in gathering

figures on incidence. The second, in our opinion totally unjustifiable, was to accept the diagnosis on the basis of the therapeutic response to salicylates. Jones has called attention to this fallacy.<sup>2</sup> We have seen proven cases of rheumatic fever which had little or no subjective or objective response to large doses of salicylates. Conversely we have seen patients with bizarre arthralgias and myalgias whose symptoms were relieved with this type of therapy. Salicylates in large doses also can decrease the erythrocyte sedimentation rate, without altering the course of the disease.<sup>3</sup> During the course of salicylate therapy, with serum levels of 300 gamma per ml. or higher, Murphy has observed the development of characteristic rheumatic lesions in tendons, the heart, the lungs, and in other sites.<sup>4</sup>

## RELATION TO GROUP A STREPTOCOCCAL DISEASE

Table 1 shows the number of cases of acute rheumatic fever at six stations at which the criteria for diagnosis were standardized.<sup>2</sup> At all these posts the type of personnel and the military training program remained essentially unchanged over the period of 1943 and 1944. This table indicates that the disease was more frequent in certain sections of this country and that variations occurred from one year to the next. These variations could not be solely related to sulfonamide prophylaxis.

\* Cardiologist, New York City Department of Health. Formerly associated with A.A.F. Rheumatic Fever Control Program.

TABLE 1

Location of Station Hospital	Cases of Acute Rheumatic Fever Admitted to Hospital		Military Activity	Approximate Average Strength	Chemoprophylaxis	
	1943	1944			1943	1944
Colorado	387	373	Basic Training, Technical Schools	12,000	None	1
North Texas	58	87	Basic Training, Mechanics Schools	16,000	None	2
Wisconsin	94	106	Technical School	15,000	None	3
South Dakota	212	83	Technical School	14,000	None	4
Illinois	52	26	Technical School	15,000	None	None
Iowa	13	19	Advanced Flying Training	4,000	None	None

<sup>1</sup> Sulfadiazine prophylaxis used in winter of 1944. Experimental program. Results were inconclusive.

<sup>2</sup> Sulfadiazine prophylaxis used one day in winter of 1944 because of threat of meningococcus infections.

<sup>3</sup> Sulfadiazine prophylaxis used continuously for 21 days in April, 1944. See figures relating to "Post B," Holbrook, W. P., *J.A.M.A.*, 126:84-87 (Sept. 9), 1944.

<sup>4</sup> Sulfadiazine prophylaxis used in February and March, 1944. Hodges, R. G., *New England J. Med.*, 231:817-820 (Dec. 21), 1944. The author attributes the lessened incidence of rheumatic fever to the sulfa-prophylaxis.

laxis. A complete explanation of them is unknown to us. Grouping and typing of hemolytic streptococci were first performed in special laboratories at Air Force hospitals in the early part of 1944, so correlation of rheumatic fever and streptococcal disease are not available prior to this time.

The total number of rheumatic fever patients hospitalized in 1945 is not available, as the final reports following disposition have not been received. It is known, however, that the incidence was greatly reduced. The incidence rates for streptococcal diseases were also lower than those of previous years. A large amount of streptococcal disease during 1945 was caused by a sulfadiazine resistant group A type 17 organism, following which an appreciable amount of rheumatic fever might have been expected. The United States Navy had epidemics of respiratory disease caused by a sulfa-resistant type 17 streptococcus, with approximately 2 per cent of these cases subsequently developing rheumatic fever, according to Commander Coburn.

The first epidemic in the Air Forces of streptococcal disease caused by this type 17 strain broke out in a field on the Gulf coast of Mississippi late in December, 1944.<sup>5</sup> This field had an

established special laboratory equipped to perform grouping and typing of streptococci by the capillary precipitin techniques of Lancefield.<sup>6</sup> Type 17 streptococcus had not been isolated from patients with respiratory infections admitted to the hospital nor from routine bacteriological surveys of samples of the post population in the three months immediately preceding the onset of the epidemic. It is estimated that at least 1,000 men became ill with respiratory diseases caused by this strain of streptococcus, even though the entire population of the field was placed on one gram of sulfadiazine daily as a prophylactic measure. The diagnosis was proved clinically and bacteriologically in 271 soldiers admitted to the hospital. Only one case of acute rheumatic fever developed.

Similar type 17 epidemics occurred in February and March, 1945, at the fields in Colorado\* and North Texas.<sup>7</sup> The personnel of both of these fields were also placed on a regimen of sulfonamide prophylaxis, following which other types of hemolytic streptococci previously common were seldom found in throat cultures of individuals hos-

\* In 1945, there was no basic training at this field, so that the strength was reduced by half and composed for the most part of seasoned men.

pitalized with respiratory infections. Six cases of rheumatic fever were admitted to the hospital in Colorado and 10 cases to the hospital in North Texas during the course of the epidemics. At neither field did rheumatic fever develop in an individual hospitalized for a respiratory infection caused by type 17 streptococcus. Four of the cases at the North Texas post had type 17 present in their throat cultures on admission for rheumatic fever.<sup>8</sup> This finding was considered to represent a carrier state, although previous infection could not be excluded.

At the other four fields listed in Table 1 there was no outbreak of streptococcus respiratory diseases caused by this type 17 organism. The field in Wisconsin had a sulfadiazine sensitive group A type 19 streptococcus epidemic. One-half of the school population at this post was placed on a sulfa-prophylaxis program; 22 cases of rheumatic fever occurred during that period (Table 2).<sup>10</sup> This experience will be discussed under the section on chemoprophylaxis.

Jennings and his coworkers<sup>11</sup> investigated the relationship of rheumatic fever to respiratory diseases for a full year at a large camp in Utah; their results are shown graphically in Chart 1. As a basis for this information, throat cultures were obtained on all enlisted personnel admitted from the camp to the hospital for acute respiratory diseases, including scarlet fever and pneumonia. These cultures were examined for hemolytic streptococci, which, when found, were grouped and typed by the Lancefield precipitin techniques.

The curve for rheumatic fever cases is plotted on a scale ten times larger than that for the other two curves. It includes only cases from the enlisted complement of the camp who had been stationed there for a minimum of two weeks.

As the authors point out, there are

many reasons why these three curves should be taken as indices rather than actual measurements. Only hospitalized cases of respiratory diseases are included, whereas it has been noted by many observers that attacks of rheumatic fever may be preceded by respiratory infections too mild to require hospitalization. The incubation period of rheumatic fever is considerably longer than that of acute respiratory disease, and the rapid turnover of personnel may have resulted in the loss of patients in this stage of rheumatic fever.

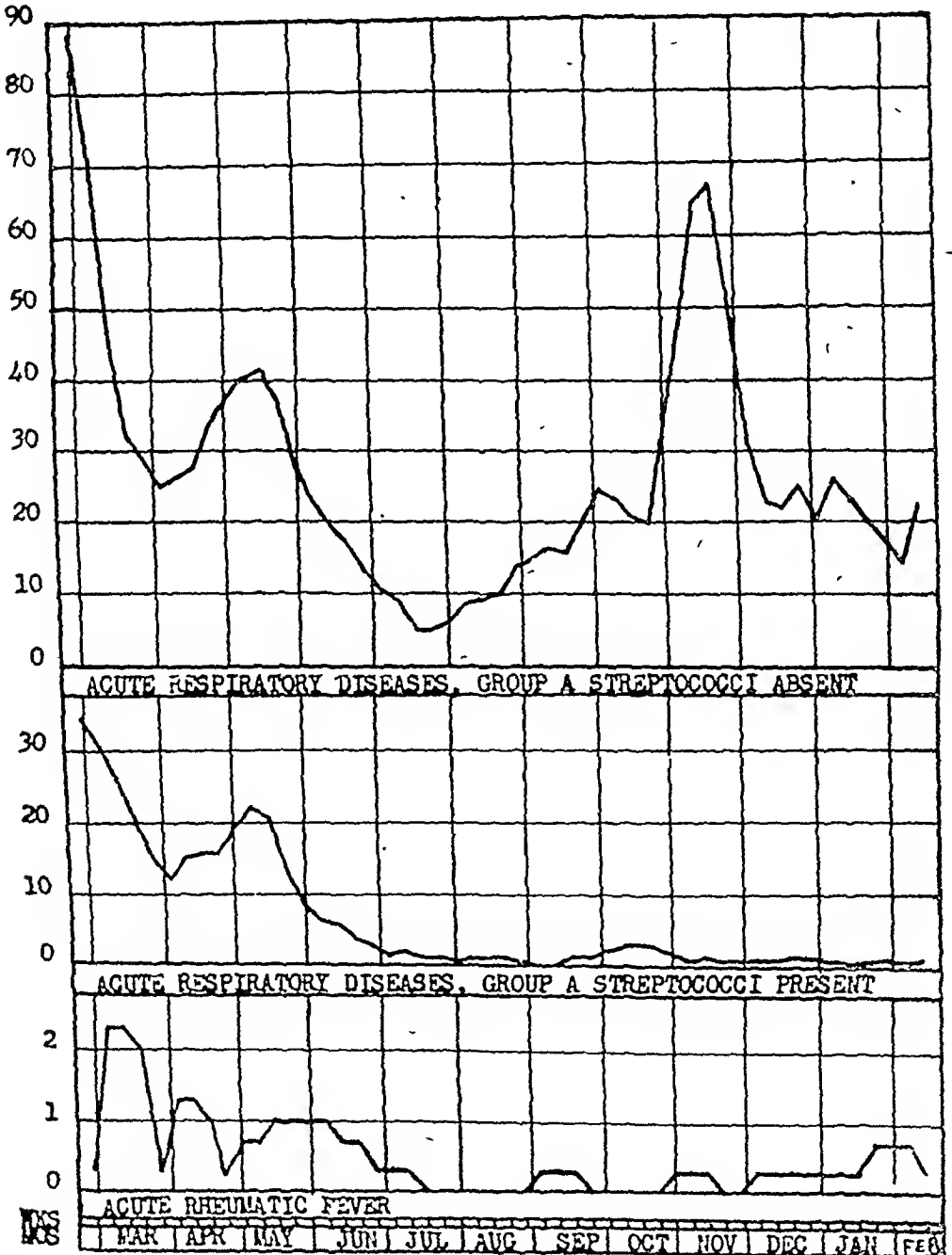
In spite of these qualifications, it is seen that the trend of the incidence of acute rheumatic fever follows closely that of group A streptococcal respiratory disease. This correlation occurred not only during a period of high incidence of group A streptococcal respiratory diseases (March to June) and a period of low incidence (July to September), but also during a period in which nonstreptococcal respiratory infections were frequent, although group A streptococcal diseases were almost absent (October to February).

Attempts to demonstrate a relationship between the incidence of acute rheumatic fever and individual types of group A streptococci were unsuccessful at this camp as has been reported by others.<sup>9</sup>

In the Rocky Mountain area where the incidence of rheumatic fever was highest for all the United States armed services and also in the Canadian Army,<sup>12</sup> one Air Force post, used as a training school for clerks, had relatively few cases of rheumatic fever and also a low rate for hemolytic streptococcal disease. (A special streptococcus laboratory was not established at this post; the hospital was equipped to do ordinary bacteriological examinations.) This post was located within a 25 mile radius of two other stations which had the greatest number of rheumatic fever patients and high streptococcal disease

CHART 1—The Relative Frequency of Respiratory Diseases and Rheumatic Fever, Kearns, Utah,  
February 19, 1944, to February 23, 1945  
Three point moving averages of weekly cases

Respiratory diseases dated by admission, rheumatic fever by onset



rates each winter and spring. This post in the foothills of the Rocky Mountains was used as a control in a study of 120 rheumatic fever patients

to determine the effect of altitude and climate on convalescence. Sixty patients were placed on this post while a comparable group of 60 cases was

evacuated by air to southern Arizona. All patients at the control station recovered clinically as well and as rapidly as at the southwestern field, and during a period of six months, there were no recrudescences of rheumatic fever.<sup>13</sup> Actually both groups were convalescing in areas of low incidence of group A streptococcal disease.

#### CHEMOPROPHYLAXIS

Sulfadiazine prophylaxis was widely used in the Army and Navy during the war. In the discussion of the Navy program for the control of streptococcal infections Coburn states that the incidence of rheumatic fever among men receiving chemoprophylaxis was 15 per cent of the incidence in control groups.<sup>14</sup> In the Army Air Forces sulfadiazine was not used in the same manner or extent as in the Navy. Fortunately, we were not confronted with the serious epidemics that occurred in several Navy "boot camps."

A thorough study at a large technical school in Wisconsin conducted by Warren demonstrated no effect in the reduction of rheumatic fever.<sup>10</sup> Table 2 shows the total man-days of exposure of a control and treated (one gram of sulfadiazine daily) group and the actual number of cases of acute rheumatic fever hospitalized in each group. Calculating the number of cases expected in the treated group, using the control group as a base, showed that one case less than expected occurred.

Investigation of the effectiveness of salicylates and of sulfonamides in preventing the occurrence of acute rheu-

matic fever after the onset of an acute group A streptococcal respiratory infection was undertaken. In a single winter month at a Colorado post 275 acute respiratory infections, in whose throat cultures hemolytic streptococci were found, were divided into three groups.<sup>15</sup> Symptomatic therapy was given to 130 during their hospitalization; 15, or 11.5 per cent, developed rheumatic fever. Sixty-seven were given 2.6 grams (40 grains) of aspirin during their hospital stay and after discharge were given the same amount in one dose daily for 3 weeks; 5 or 7.5 per cent, developed rheumatic fever. Seventy-eight were treated with some type of sulfonamide during their hospital stay and for a period of 2 or 3 weeks thereafter; 3, or 3.8 per cent, developed rheumatic fever. It is believed that the series is too small to justify a definite conclusion that sulfonamide therapy was of value in the prophylaxis of rheumatic fever after the onset of a respiratory streptococcal infection. In another study involving patients with scarlet fever caused by either type 17, 19, or 30 streptococcus, conducted in a similar geographical area, the occurrence of rheumatic fever was highest among those treated with large doses of sulfonamides.<sup>16</sup>

#### THERAPY OF ACUTE RHEUMATIC FEVER

Penicillin was administered to 38 patients with acute rheumatic fever in a coöperative study at three Air Force hospitals.<sup>17</sup> The drug was given intramuscularly in doses of 25,000 units at 3 hour intervals for a total of 1,000,000 units. No benefit could be demonstrated in any patient, and definite aggravation of the course of the disease was evident in several cases.

In 1943 Coburn reported his experience with the intravenous administration of salicylate in this disease.<sup>18</sup> This was the first study in which the therapeutic response was correlated with the

TABLE 2  
*Sulfadiazine Prophylaxis*  
*January 5 to May 1, 1945*

	Control	Treated
Man-Days Exposure	292,520	394,560
Acute Rheumatic Fever Admitted to Hospital	10	12
Estimated Cases, Control as Base	..	13

actual plasma level of salicylates. The excellent results attained in controlling the infection and in preventing valvular heart disease stimulated further studies.

McEachern at a Colorado field investigated intravenous sodium salicylate therapy, following closely the procedure of Coburn.<sup>19</sup> The intravenous administration was continued until the patient's erythrocyte sedimentation rate dropped appreciably—at least 20 per cent. When this point was reached, oral treatment was substituted, using a total of 10 gm. of sodium salicylate and 5 gm. of sodium bicarbonate daily. This schedule was followed until clinical evidence of active infection had disappeared, and until the blood sedimentation rate remained at normal levels for a period of two weeks. If clinical or laboratory evidence of carditis had been present the salicylates were administered for an additional 2 weeks.

Alternate cases admitted to the hospital wards were treated with oral salicylates exclusively in the dosage as outlined above. Thirty-seven cases were studied in each group. A comparison of results was made on the basis of temperature response, pulse response, joint response, and the time it took the leucocyte count and erythrocyte sedimentation rate to return to normal. The oral method of treatment was more satisfactory in all these comparisons. Blood salicylate levels were obtained in the orally treated group that closely approximated those obtained with intravenous therapy.

The toxic effects of intravenous salicylates were serious and frequent. Six cases developed an acute psychosis. Almost all presented a combination of such symptoms as nausea, vomiting, and tinnitus. This contrasted sharply with the orally treated cases, where fewer than 25 per cent complained of any discomfort, and then usually only mild nausea or tinnitus.

In both groups there was evidence of

valvular injury, as judged by the development and persistence of diastolic murmurs along the left sternal border or loud rough apical systolic murmurs, associated with cardiac enlargement. Five such cases occurred in the intravenous treatment group.

A similar clinical study of salicylate therapy was made at a field in Wisconsin.<sup>20</sup> Forty-eight patients received intravenous salicylates and 50 oral salicylates of 10 or more gm. daily; 7 developed significant cardiac murmurs not present on admission to the hospital, or showed progression of preëxisting heart disease. Another group of 88 patients received smaller doses of sodium salicylates, and the blood levels in a few studied cases never reached 300 gamma per ml.; 7 of this group developed significant cardiac abnormalities.

#### MANAGEMENT OF CONVALESCENT PHASE

A frequent and a major problem, observed during the handling of patients with rheumatic fever, is the development of anxiety states. Many of the contributing factors to these neurotic reactions in the Army have been discussed by Ershler.<sup>21</sup> In an attempt to minimize these anxiety states, in the fall of 1944 patients were ordered transferred to convalescent centers within 2 weeks of the onset of acute rheumatic fever. This in effect placed the patient under the constant care of only one group of physicians.

In the early part of 1944, Robertson, Schmidt, and Feiring,<sup>22</sup> at a convalescent center in Florida were impressed by the large number of cases who on arrival had disabling anxiety neuroses. After personal interviews they believed that the mental state was largely fostered by the preceding therapeutic program, which demanded absolute bed rest throughout, and even beyond the acute stage of rheumatic fever. They challenged the concept that confinement



to bed implies the ultimate expression of rest. These authors define rest as "maximum ease and comfort, physically, mentally, and emotionally. Bed rest ceases to be rest when the patient is no longer at optimum comfort in his environment."

The change in policy in the convalescent program enabled these physicians to treat patients in the acute phase of the disease. Accordingly a group of one hundred patients in this phase were permitted to sit in or out of bed and to walk a short distance to the latrine. The presence of joint symptoms, of changing cardiac murmurs, of varying P-R intervals, of increased erythrocyte sedimentation rates, of subcutaneous nodules or other signs of acute activity were not considered deterrents to limited physical activity. The only exceptions were patients with heart failure or with incapacitating joint inflammations.

Results are admittedly difficult to evaluate, but these patients slept soundly, their appetites were better, as reflected by gains in weight, their bowel habits were more regular, and their morale for recovery was improved. During these first periods of activity the patients were taking therapeutic doses of salicylates. No control cases were observed at the same time for psychological reasons. In this group, however, the clinical and laboratory phenomena indicative of acute rheumatic processes diminished as rapidly as in the previous year when strict bed confinement was practised. At the end of 6 months, no soldier of this group had been discharged from the Army because of an anxiety neurosis.

The final conclusion of the authors is quoted: "We recognize that this study does not warrant any dogmatic conclusions at this time; nor do we advocate indiscriminate physical activity. Nevertheless, it does invite attention for reevaluation of the currently

accepted policy of prolonged bed rest, with its disadvantages, in the treatment of acute rheumatic fever."

#### SUMMARY

1. Studies at Army Air Forces hospitals during the war lend support to the previous reports of group A streptococcal disease as the inducing infection in acute rheumatic fever attacks.

2. The prophylactic administration of sulfadiazine to large numbers of troops for varying periods of time has not been conclusively shown to lower the incidence of rheumatic fever. Such procedures have caused a prompt reduction in the incidence of hemolytic streptococcal respiratory disease, except in the case of the sulfadiazine resistant type 17 streptococcus.

3. Neither salicylates nor sulfonamides, when administered after the onset of a group A streptococcal respiratory infection and continued for the following 3 weeks, were effective in preventing the onset of acute rheumatic fever.

4. Penicillin in moderately large doses has no beneficial action on the acute rheumatic infection.

5. The use of massive doses of salicylates either intravenously or orally has not protected against the development of valvular heart disease. Blood plasma salicylate levels of more than 300 gamma per ml. are readily attainable by oral administration. Massive doses given intravenously produce severe, though transient, toxic reactions in the majority of cases.

6. A major problem in the convalescent management of rheumatic fever patients is to forestall the development of cardiac neuroses and anxiety states. The present concept of complete bed confinement as true rest has been challenged. It is desirable to investigate further "the value of judicious physical activity as a component part of the therapy of rheumatic fever."

## REFERENCES

1. Sweigert, C. F. Differential Diagnosis and Treatment of Diseases of the Joints. *News Letter AAF Rheumatic Fever Control Program*. Vol. 2, No. 9 (Sept.), 1945.
2. Jones, T. D. The Diagnosis of Rheumatic Fever. *J.A.M.A.*, 126:481-484 (Oct. 21), 1944.
3. Twiss, A. R. Personal Communication to the author.
4. Murphy, G. E. Salicylates and Rheumatic Activity. *Bull. Johns Hopkins Hosp.*, 77:1-42, 1945.
5. DeLamater, E. D., Jennings, R., and Wallace, A. W. Preliminary Report of Type 17 Streptococcus Epidemic. *J. Infect. Dis.* (to be published).
6. Lancefield, R. C. Specific Relationship of Cell Composition to Biological Activity of Hemolytic Streptococci. *Harvey Lectures*, 1940-1941. Baltimore. Williams & Wilkins, 1941.
7. Mitchell, R. B., and Van Ravenswaay, A. C. Hemolytic Streptococcal Discases and Acute Rheumatic Fever in the AAF. *Air Surg. Bull.*, 2:311-314, 1945.
8. Roberg, N. B. Personal Communications to the author.
9. Rantz, L. A., Boisvert, P. J., and Spink, W. W. Etiology and Pathogenesis of Rheumatic Fever. *Arch. Int. Med.*, 76:131-138, 1945.
10. Warren, H. A. Sulfonamide Prophylaxis of Common Respiratory Diseases. *News Letter AAF Rheumatic Fever Control Program*. Vol. 2, No. 8 (Aug.), 1945.
11. Jennings, C. G., Shott, K. V., and Martin, A. G. The Relation Between Group A Streptococcal Infections and Rheumatic Fever. *News Letter AAF Rheumatic Fever Control Program*. Vol. 2, No. 6 (June), 1945.
12. Feasby, W. R. Rheumatic Fever in the Canadian Army. *War Med.*, 6:139-143, 1944.
13. Ershler, I. Personal Communication to the author.
14. Coburn, A. F. The Prevention of Respiratory Tract Bacterial Infections. *J.A.M.A.*, 126:88-92 (Sept. 9), 1944.
15. Williams, L. D. Rheumatic Fever Survey. *Report to the Air Surgeon*, 1945.
16. Ball, F. E., and Berry, C. D. Unpublished data.
17. Foster, F. P., McEachern, G. C., Miller, J. H., Ball, F. E., Higley, C. S., and Warren, H. A. The Treatment of Acute Rheumatic Fever with Penicillin. *J.A.M.A.*, 126:281-282 (Sept. 30), 1944.
18. Coburn, A. F. Salicylate Therapy in Rheumatic Fever. *Bull. Johns Hopkins Hosp.*, 73:435-464, 1943.
19. McEachern, G. C. Use of Oral and Intravenous Salicylates in Acute Rheumatic Fever. *News Letter AAF Rheumatic Fever Control Program*. Vol. 2, No. 4 (Apr.), 1945.
20. Warren, H. A., Higley, C. S., and Coombs, F. S. The Treatment of Acute Rheumatic Fever. *News Letter AAF Rheumatic Fever Control Program*. Vol. 2, No. 10 (Oct.), 1945.
21. Ershler, I. The Convalescent Care of Rheumatic Fever in the Army Air Forces. *Med. Clin. N. A.*, 29:765-770, 1945.
22. Robertson, H. F., Schmidt, R. E., and Feiring, W. The Therapeutic Value of Early Physical Activity in Rheumatic Fever. *Am. J. M. Sc.* (to be published).

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This list is released by the Executive Board of the American Public Health Association as of January 25, 1946, and includes those institutions from which requests for accreditation had been received to that date. Additional applications will be acted upon in due course.

The criteria governing accreditation for the academic year 1946-1947, as approved by the Committee on Professional Education of the American Public Health Association on January 11, 1946, and by the Executive Board on January 25, 1946, follow the listing.

Columbia University School of Public Health  
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University of California School of Public Health

University of Michigan School of Public Health

University of Minnesota School of Public Health

University of North Carolina School of Public Health

University of Toronto School of Hygiene

Yale University School of Medicine, Department of Public Health

NOTE: See page 953 of the *American Journal of Public Health*, September, 1945, for Editorial entitled "Accreditation of Schools of Public Health."

MINIMUM REQUIREMENTS FOR INSTITUTIONS TO BE ACCREDITED FOR THE DEGREE OF MASTER OF PUBLIC HEALTH (DIPLOMA OF PUBLIC HEALTH IN CANADA) \*

Adopted by the Committee on Professional Education of the American

Public Health Association, January 11, 1946.

## *The Institution*

1. Any institution to be accredited must be a member of the Association of American Universities, or present evidence that it may reasonably be considered as qualified for such membership.

2. The school, faculty, or council administering courses in public health must have such practical autonomy that requirements for the degree are effectively controlled by the public health faculty.

3. The teaching of public health must be under the direction of a full-time teaching faculty, of acceptable quality and experience, which must include (in addition to assistant professors and others of lower rank and in addition to part-time appointees):

- a. One member of professorial grade as director of the school (or department) and at least two other members of professorial or associate professorial grade—all three primarily responsible to the administration of the school, and
- b. At least three other members of professorial or associate professorial grade, either primarily responsible to the school or giving full time to the university and

\* These criteria will govern accreditation for the academic year 1946-1947. They may be modified for application after that date; and are likely, in some respects, to be made more stringent. It is the aim of the committee to communicate changes in these criteria to accredited schools at least nine months before the beginning of any academic year.

carrying specific major responsibility for teaching and research in the school. Such a minimum faculty could provide for a body of graduate students in public health, totalling not more than approximately thirty such students.

4. The school or department must have an assured minimum basic annual income adequate for its teaching and research functions and for meeting the various criteria outlined. Such income should be construed to include income from endowment of the school, contributions made from general university funds and grants made over a period of at least five years from sources outside the university. Under the second heading may be included proper allowance for time devoted to instruction of public health students by members of other university faculties.

5. Proper housing must be available, including lecture rooms, seminar rooms, and adequate laboratory facilities for the teaching of subjects in the field of microbiology (including microscopes, culture media apparatus, etc.); for the teaching of vital statistics (including calculating machines for student use, and apparatus for chart making, with tabulating machinery accessible for demonstration purposes); and for the teaching of sanitary engineering (including laboratory facilities for the examination of water and sewage and for the demonstration of the basic principles of hydraulics).

6. Library facilities are essential to the extent of at least 3,000 volumes in the general field of public health (including such special topics as epidemiology, microbiology, vital statistics, sanitary engineering, medical economics and medical sociology, nutrition, and the like), and current periodicals (not including health department reports) to the number of at least 50 in the fields mentioned above.

7. There must be available conveniently located administrative units of public health services, which can be utilized for observation and criticism in the basic courses for the Master of Public Health, and which are of sufficiently high quality to make such observation fruitful.

### *The Course*

8. Candidates to be admitted for the degree of Master of Public Health (Diploma of Public Health in Canada) may be either

- a. Holders of the degree of M.D., D.D.S., or D.V.M. or equivalent degree, from an acceptable institution; or
- b. Holders of a bachelor's degree with adequate training in mathematics and the natural sciences including chemistry and biology; and also qualified in some professional capacity for postgraduate education in public health; and must in addition have either
  - x. Professional academic qualifications in engineering, nursing, education or postgraduate work in other fields of public health; or
  - y. Three years of experience in responsible public health practice.

9. The length of the course shall be not less than one academic year of 32 weeks.

It is highly desirable that the candidate shall have had practical public health experience in the form of supervised field service or in a position involving the exercise of substantial initiative and responsibility. This experience should preferably be obtained prior to entrance into the school. In some schools, candidates not so equipped on entrance are required to complete three months of practical work in the field before receiving their degree.

10. The following courses are among

those generally offered in schools of public health:

- a. Public Health Administration
- b. Sanitation
- c. Microbiology
- d. Vital Statistics
- e. Epidemiology
- f. Physiological Hygiene
- g. Nutrition
- h. Public Health Nursing
- i. Health Education
- j. Economic Factors in Health
- k. Mental Hygiene
- l. Public Health Law
- m. Industrial Hygiene
- n. School Health
- o. Maternal and Child Health

It is believed that it would be highly undesirable to make standard requirements with regard to any particular courses of instruction. It does seem important, however, that the student—at some point in the M.P.H. course (or prior to that course)—shall receive instruction in the following basic fields:

#### A. Basic Public Health Sciences

- (1) The nature and functioning of the human organism, and the personal behavior which influences its well-being, including nutrition and mental hygiene.
- (2) The nature and behavior of various forms of parasitic life (including viruses); their interaction with the human body as demonstrated by clinical and immunological reactions; the modes in which such micro-organisms are transferred from host to host in the course of their epidemiological history; and the ways in which such dissemination may be controlled.
- (3) The physical environment as it influences health, including not only the classical problems of environmental sanitation, but also those relating to housing and industrial hygiene.

- (4) The social and economic factors which influence the health of the individual and of the community, and the influences of sickness on the social and economic status of the individual and the community.
- (5) The nature and sources of quantitative information bearing on the health of the people, and its numerical presentation and analysis.

#### B. Public Health Practices

- (6) The principles of applying the basic sciences listed above to community health and welfare. This involves the elements of sound public administration as applied to official and voluntary health agencies, including office management, budget making, personnel relations, and public health law; and includes also the wide field of public relations as influenced by health education and community organization.

11. There must be opportunity for advanced specialization in one or more of the fields listed under (10) above or in such special fields as tuberculosis control, venereal disease control, or tropical medicine. There will be little time available in the M.P.H. year for advanced specialization; but basic work can be conducted effectively only in an atmosphere of advanced scholarship and with the essential stimulus which comes from the conduct of productive research by the faculty and advanced students.

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## Guarding the Health Department

"The voluntary health agencies, acting in the spirit of our kind of democracy, have often found themselves undertaking to guard the common interest by defending and promoting, and when necessary criticizing, the public health institutions and officials. There is nothing presumptuous in this. It is a proper exercise of the citizen interest in its tax-supported agencies. Such action by citizens or groups of citizens emerges normally out of the major purposes of a voluntary health agency and out of the increasing reliance upon public understanding and public acceptance of new doctrines regarding the prevention of disease and the promotion of health. Such activity may, indeed, be considered an aspect of the educational function of the voluntary health agency and is perhaps exercised too little rather than too much.

"It takes real vision and leadership to see when and where the private

citizens concerned with the health of the community should rally to the defense of their health department, should fight for its standards or for raising the standards, should uphold its unpopular decisions in times of emergencies—and should, on occasion, criticize the administration. The health department which in the past often had its origin in the fear of people in times of great epidemics, is still thought of by some as the disturber of equanimity and the purveyor of dire warnings. It is the task of the voluntary health agencies to develop understanding until the feeling is firmly established in the citizen's mind that the health department is truly *his* health department. The rare health officer can bring this about himself; the average health officer needs the voluntary health agency more often than he realizes."—*Voluntary Health Agencies*. Gunn and Platt. New York: Ronald Press, 1945. 364 pp. \$3.

# Public Health Aspects of Dehydrated Foods\*

## Food and Nutrition Section

**D**EHYDRATION, as applied to foods, implies the removal of water under controlled temperature and humidity conditions. With this definition in mind, the present report omits fruits, which, with the exception of apples and prunes, are generally sun-dried.<sup>1</sup>

The dehydration of foods, particularly vegetables, eggs, and milk, has greatly increased during the present emergency. The past history of the industry, as well as the commercial methods used, have been presented elsewhere,<sup>1, 2</sup> and will not be gone into here. The expansion of the industry, particularly as it pertains to vegetable dehydration, is considered by many as a war measure. Yet at the 1944 annual meeting of the National Dehydrators Association proposals were submitted for an extensive research program to aid in post-war production. What course the industry may take in the future will, of course, depend upon consumer acceptance of dehydrated foods, and the energy and resourcefulness displayed by dehydrators in developing markets and producing quality products. A few surveys have already been made in various cities relative to consumer acceptance of such dehydrated foods as vegetables and soups.<sup>3, 4</sup>

Because of the rapid expansion in production of dehydrated foods, little concerted attention, except in the case of dried egg powder, has been devoted

to their public health aspects. It is the purpose of the committee to examine available data pertaining to the microbiological and nutritional aspects of dehydrated foods, and where advisable to submit recommendations for future action.

The fundamental difference between the bacteriology of dehydrated foods and canned foods is that the former are never sterile. Haines and Elliot<sup>5</sup> have pointed out that three basic requirements must be met by dehydrated foods to obtain a bacteriologically satisfactory product:

1. Conditions of manufacture must be such that, should toxigenic organisms, e.g., *Clostridium botulinum*, Staphylococci, and perhaps other organisms, be present in, or gain access to the commodity before or during processing, no bacterial toxins are formed.

2. The dehydrated product should not contain organisms likely to be pathogenic to man by the mouth, e.g., *Salmonella* and dysentery bacteria.

3. It is desirable that the general bacterial content of the product shall be reasonably low so that no decomposition or development of undesirable flavor occurs over the period of reconstitution. Special problems may arise if the dehydrated product is to be incorporated into some other food whose water content is high enough for bacterial growth to occur.

Theoretically, groups of organisms whose presence in foods may be considered dangerous include spore-forming anaerobes represented by *Cl. botulinum*; enteric organisms of the typhoid, paratyphoid, dysentery, and *Salmonella* groups; and certain staphylococci. Some epidemiologists would perhaps

\*Report of the Committee on Foods (Except Milk).

COMMITTEE ON FOOD (EXCEPT MILK)

Organized 1932. Published reports: *Year Books* 1933-1934, 1934-1935, 1935-1936, 1936-1937, 1937-1938, 1939-1940, 1940-1941, *A.J.P.H.*, July, 1945.

include streptococci. From data available, neither dysentery organisms nor *Cl. botulinum* have ever been found in dehydrated foods but, as explained later, *Salmonella* and staphylococci have been demonstrated. The significance of their presence is complicated by the fact that it is not known whether their number is sufficient to cause symptoms of poisoning. Nor is it known whether *Cl. botulinum* can multiply under conditions prevailing when foods are dehydrated; but as Haines and Elliot have pointed out, the theoretical possibility cannot be dismissed.

Aside from the microbiological aspects of dehydrated foods and their relation to public health, the possible loss of nutrients during processing cannot be overlooked. Considerable data have accumulated in this field relative to dehydrated vegetables and eggs, but there is a paucity of information in the case of dehydrated fish. Few data are available indicating the loss of nutrients by rehydration of dehydrated foods.

#### DEHYDRATED VEGETABLES

There has been a tremendous increase in the production of dehydrated vegetables during the present emergency (Table 1).

As of July 1, 1944, approximately 30 per cent of the entire production came from California; 18.5 per cent from Idaho, practically all of which was potatoes; 6 per cent from New York; Washington 5.5 per cent; and 5 per cent each from Maine and Oregon. The remaining 30 per cent originated among the other states of the country.

*Microbiological aspects*—Because of their proximity to the ground, vegetables are liable to contamination by soil bacteria, as well as infection from human sources by handling during preparation for dehydration. Washing and subsequent blanching will reduce the flora, but recontamination will occur during traying and packing.<sup>6,7</sup>

Prescott<sup>8</sup> and Prescott, Nichols, and Powers<sup>9</sup> were probably the first to make a bacteriological study of dehydrated vegetables 25 years ago. They found none of the vegetables investigated to be sterile, and practically all the organisms found were of the soil and water type, the latter predominating.

TABLE 1

*United States Production of Dehydrated Vegetables 1919 to 1944-45<sup>1</sup>*

Year	Plants	Quantity 1,000 lbs.	Value \$1,000
	Operating Number		
1919	25-30	10,346	2,643
1921	"	3,776	453
1923	"	4,016	321
1925	"	1,276	190
1931	"	"	252
1939	"	5,640	522
1941-42	15-20	15,000 <sup>4</sup>	8,000 <sup>5</sup>
1942-43	65-70	75,000 <sup>4</sup>	40,000 <sup>5</sup>
1943-44	142	184,000	85,000 <sup>5</sup>
1944-45	130 <sup>4</sup>	196,041 <sup>6</sup>	

Source: 1919 to 1929, U. S. Bureau of Census; 1941-45, War Food Administration, U. S. Dept. Agr.

<sup>1</sup> Figures not strictly comparable because of changes in classification.

<sup>2</sup> Not available.

<sup>3</sup> It was reported that 6 dehydrating plants were operating before 1940, and that only 4 of these were of importance.

<sup>4</sup> Approximate.

<sup>5</sup> Estimated.

<sup>6</sup> Preliminary.

Agar plate counts ran from 60 to 1,600,000 per gm.; while mold counts varied from less than 20 up to 600 per gm. In laboratory tests Prescott inoculated stringless beans, parsnips, tomatoes, and spinach with pure broth cultures of *Bacillus coli*, *B. typhosus*, *B. paratyphosus* A and B, *B. enteritidis*, *B. paracoli*, *B. subtilis* and *B. welchii*. The vegetables were dehydrated at 80° C. (176° F.) for 4 hours. *B. subtilis* was found to have survived dehydration, while organisms resembling *B. typhosus* and the paratyphoid forms in some respects, but not typical, were found. Further work under commercial conditions of dehydration showed destruction of all or-



TABLE 2

*Occurrence of Bacteria in Dehydrated Vegetables (Condensed from Haines and Elliot)*

Product	Plate Count, Organisms per gm.	Flora
Carrots	1,000 to 100,000,000	Micrococci, white non-hemolytic coccus, sporing aerobes, molds, <i>actinomyces</i> , coliforms of the aerogenes and fecal types. Clostridia and thermophiles only occasionally.
Cabbage	1,000 to 1,000,000	Micrococci, coliform (aerogenes and fecal), sporing aerobes, enterococci, <i>viridans</i> streptococci, small Gram-positive rods. Clostridia and thermophiles occasionally.
Potatoes	100 to 1,000,000	Sporing aerobes, white and yellow micrococci, coliform (chiefly <i>aerogenes</i> ), diphtheroids, Gram-negative white cocci, <i>actinomyces</i> and molds. Clostridia and thermophiles occasionally.

ganisms with which the material had been inoculated. Prescott points out that these results should be considered only preliminary. Later researches by Clague<sup>10</sup> showed that dehydration will not completely kill *B. coli* if present.

Although there has been some research carried out in this country since Prescott's report<sup>6, 7, 10, 11, 12</sup> on the bacteriology of dehydrated vegetables, more must be accomplished before a clearer picture can be obtained. Recent data summarized from researches of British investigators by Haines and Elliot<sup>5</sup> are given in Table 2.

Vaughn, Stadtman, and Kueneman<sup>6</sup> have surveyed a number of dehydration plants to determine the microbial population of the finished products. They found that overloading of the trays contributed to a large bacteria count in the finished product. Other factors influencing the count were post-blanching contamination by unclean hands of the workers, dirty trays and other inadequately cleaned equipment, and the use of polluted water. They found counts as high as 1,000,000,000 per gm. in spoiled, dehydrated potatoes, the most predominant types being the non-spore formers *Acrobacter aerogenes* and spore formers similar or identical to *Bacillus megatherium*. In soured dehydrated

onions, lactic acid organisms tentatively identified as *Lactobacillus plantarum* and *L. brevis* were found along with coliform organisms. Both Clague<sup>10</sup> and Kinter and DeLay<sup>11</sup> found lactose fermenters not of the coliform type in dehydrated vegetables. Hucker, et al.<sup>7</sup> also found lactic acid and spore-bearing rods in two dehydration plants studied.

Hucker, et al.<sup>7</sup> carried out studies in 12 dehydration plants and of dehydrated potatoes, beets, and carrots. In 9 of these 12 plants the food was contaminated with members of the coliform group. In approximately 80 per cent of the cases, presumptive tests could be secured for coliform organisms on the finished dehydrated vegetables just prior to final packaging.

There are no bacteriological standards for dehydrated vegetables. The Quartermaster Corps controls the quality of its dehydrated products by means of specifications, plant supervision, product inspection, and laboratory examination.<sup>13</sup> It should be pointed out that these specifications do not include bacteria counts, but are chiefly physical. In some cases, special sanitary inspections are carried out by personnel of the Veterinary Corps at the request of the procuring agencies.

The moisture content at which de-

hydrated vegetables are dispensed would probably not permit bacterial growth. If properly protected from moisture pick-up, Prescott, Nichols, and Powers indicate that bacteria in the product will decrease during storage.<sup>9</sup> Kinter and DeLay<sup>11</sup> found that dehydrated cabbage having an initial count of 1,058,000 decreased to 10,000 upon 10 weeks' storage. Vaughn, et al., on the other hand, state that unpublished data by them indicate that under ideal storage conditions the microbial population may persist for long periods with little or no decrease in numbers.

*Nutritional aspects* — The nutritive value of dehydrated vegetables will depend upon the quality of the raw product, speed and care in handling, method of blanching, and rapidity of dehydration.

There will be some loss of minerals, proteins, and water soluble vitamins during blanching, and in general this loss is greater in water blanching than in steam blanching.<sup>14-17</sup> In the United States, the majority of vegetables are steam blanched. Doty, et al.<sup>18</sup> have reported no loss of calcium or phosphorus during blanching of carrots.

Improvements have been attempted in methods of dehydration with the purpose of enhancing appearance, palatability and vitamin retention. Perhaps the most recent innovation has been dehydration in natural gas or methane. It is claimed that retention of vitamin C is greater using this method than when carried out in air.<sup>19</sup> Tiller, Litkenhous, and Tuberville<sup>20</sup> have experimented with infra-red dehydration. Considerable work has been done on the use of sulfur dioxide to retard deterioration of dehydrated potatoes and cabbage. Sulfur dioxide also aids in preserving vitamin C potency, but destroys thiamine.

Morgan, et al.<sup>15</sup> in a study of limited scope, found vitamin losses in blanching and dehydrating vegetables in com-

TABLE 3

*Losses of Vitamins in Commercially Produced, Freshly Dehydrated Vegetables (Condensed from data of Morgan, et al.)*

*(Expressed as per cent of the content of corresponding fresh samples)*

	Per cent Loss in		Cumulative
	Blanching	Dehydrating	Loss Per cent
Niacin	0-33	0-30	0-33
Pantothenic acid		0-30	0-30
Thiamine	0-37	11-38	0-56
Ascorbic acid	0-25	0-71	0-83
Riboflavin	0-10	0-30	0-30
Carotene	3-15	14-31	0-40

mercial practice as shown in Table 3.

In the light of present information it can be said that losses of vitamins, especially ascorbic acid and thiamine, during the commercial production of dehydrated vegetables, are large, and this factor will be of importance if such foods become an essential part of the diet.

A knowledge of the vitamin content of dehydrated foods is of importance where nutritional evaluation is desired, but the usefulness of published data is questionable unless the age of the sample at the time of analysis is indicated. Pavcek and Elvehjem<sup>21</sup> have published such data, but unfortunately the age of the samples is not stated.\* Morgan, et al. have compiled similar data and, although the samples analyzed are limited, their age at time of analysis is stated.

During the storage of dehydrated foods there is a loss of vitamins. Extensive research has been undertaken by many investigators in the attempt to decrease this loss by improved packaging and sealing in an inert gas. The most recent report has been that by Neuman, Wilson, and Van Wazer, Jr.<sup>22</sup> Heberlein and Clifcorn<sup>23</sup> found that an inert atmosphere favored the

\* The committee has been informed (private communication) that the samples were analyzed "within a few months after dehydration."

retention of carotene and ascorbic acid when dehydrated vegetables were stored at room temperatures, but the protective action of an inert gas was greatly reduced with increased storage temperatures. An inert gas had no significant effect on thiamine or riboflavin retention. Riboflavin appears to be quite stable in dehydrated vegetables. Increased storage temperatures favored the destruction of ascorbic acid, thiamine, and carotene. Beardsley, Prindle, and Stevens<sup>24</sup> also found that packing in an inert gas favored the retention of ascorbic acid and carotene, while it had no effect on the thiamine content. These investigators found no consistent effect of temperature on the stability of carotene. Tressler, et al.,<sup>16</sup> on the other hand, reported relatively large losses of carotene at all storage temperatures above  $-40^{\circ}\text{C}$ . ( $-40^{\circ}\text{F}$ ). Doty, et al. found that dehydrated carrots stored at  $21.1^{\circ}\text{C}$ . ( $70^{\circ}\text{F}$ .) in glass containers showed considerable loss of carotene, while there was little loss at a storage temperature of  $17.7^{\circ}\text{C}$ . ( $62^{\circ}\text{F}$ .) and at  $4.4^{\circ}\text{C}$ . ( $40^{\circ}\text{F}$ .).

The effect of lower moisture content of the dehydrated vegetables on retention of vitamins has been investigated. Chace<sup>25</sup> believed that low moisture content favored decreased loss of carotene and ascorbic acid during storage. Tressler, et al.<sup>16</sup> also shared this belief, but Heberlein and Clifcorn<sup>23</sup> found that, with the possible exception of decreasing the thiamine content of cabbage, the additional drying of beets, cabbage, and carrots to a lower moisture content than customarily attained had no significant effect on the vitamin content before or after storage.

Although dehydrated vegetables may contain significant quantities of vitamins when they reach the consumer, improper preparation for the table will cause appreciable losses. Fenton and Barnes<sup>26</sup> found that excessive quantities of cooking water caused a marked

decrease in the amount of thiamine retained in the vegetable, due to the leaching action. Whether or not the vegetable was rehydrated before cooking, time of rehydration and rapidity of cooking all had an important bearing upon retention of water-soluble vitamins.

#### DRIED EGG POWDER

Although dried egg powder was produced before World War II, output has greatly increased during the war period, chiefly to satisfy military and Lend-Lease demands.

TABLE 4

*Dried Egg Production in the United States<sup>1</sup>*

	Whole lbs.	Albumen lbs.	Yolk lbs.	Total lbs.
	000 omitted	000 omitted	000 omitted	000 omitted
1939	184	2,305	7,550	10,039
1940	392	1,916	5,179	7,487
1941	31,241	4,391	9,648	45,280
1942	266,127	2,253	7,269	235,649
1943	252,903	2,093	6,976	261,972
1944	311,369	2,310	7,063	320,742

<sup>1</sup> Bureau of Agricultural Economics, U. S. Dept. Agr.

*Microbiological aspects*—Hartsell<sup>27</sup> has listed the factors largely responsible for the presence of bacteria in dried egg powder as:

1. Number and kind of bacteria in the liquid whole egg
2. Temperature of processing and storage
3. Activity of lysozyme
4. Whether or not the eggs are pasteurized before breaking
5. Evenness and method of drying
6. Moisture in the finished product

Two of the factors listed: namely Nos. 3 and 4, could perhaps be omitted because some investigators see no reason for assuming the activity of lysozyme, and eggs are not pasteurized before breaking, nor has such a technique been used in the past.

Bacteria specifications, which at present should be considered as tentative, have been established for the purchase of dried egg powder by certain

government agencies. The specifications of the War Food Administration require that the plate count should not be in excess of 300,000 per gm., and *Escherichia coli* should not be present in 0.001 gm.<sup>28</sup> The Quartermaster Corps' tentative specifications permit a maximum plate count of 200,000 per gm. and a yeast-mold count of not more than 100 per gm. Higher counts are accepted with a penalty.<sup>29</sup> In 1943 the British Ministry of Food established standards for Grade A and Grade B powder<sup>30</sup>:

*Grade A powder* (prime powder for use in fresh egg dishes)—total viable count after 48 hours incubation at 37° C. shall not exceed 500,000 per gram, with *E. coli* absent from 1/100 gm.

*Grade B powder* (residual fractions, for baking purposes only)—no limit for viable count, but *E. coli* absent from 1/1,000 gm.

These standards were modified for the 1944 season in that determination of coliform organisms and *E. coli* in Grade A powder was dropped.

Gibbons and Fulton<sup>31</sup> and others have pointed out that the number of bacteria present in dried egg powder gives some indication of the sanitary conditions prevailing in the breaking and drying plants. In this connection it is interesting to note that more recent researches indicate that direct counts rather than plate counts reflect more accurately the conditions under which the eggs were handled.<sup>34, 35</sup> Gibbons and Moore<sup>32</sup> state that there is little relationship between total viable count, coliform and *E. coli* content and the presence of *Salmonella* organisms.

Considerable research has been accomplished on the bacterial flora of dried egg powder, particularly the presence of organisms of the *Salmonella* group, and their relation to public health. Unfortunately much of the work on *Salmonella* remains unpublished. *E. coli* has been found by numerous workers, and Stuart, Hall,

and Dicks state that organisms of the coliform group remain viable during storage of the product.<sup>33</sup> Reports have been made by British investigators<sup>42</sup> of the presence in dried egg powder of coagulase-positive staphylococci, viridans streptococci, and hemolytic streptococci; *S. albus*, *Proteus*, *coli* (most often aerogenes, but sometimes fecal) pink, yellow, and white micrococci, sarcinae, diphtheroids and other small Gram-positive rods, *Clostridium sporogenes*, and *Cl. welchii*. Enterococci were of frequent occurrence.

The organisms of greatest pathogenic significance are *Salmonella*, hemolytic streptococci, and coagulase-positive staphylococci. However, Gibbons and Moore<sup>36</sup> state "Whether the contamination of egg powder with organisms of the *Salmonella* group can be regarded as a health hazard is debatable." Organisms of the *Salmonella* group have been reported in dried eggs by numerous investigators.<sup>32, 37, 38</sup> Experiments by Gibbons and Moore<sup>36</sup> have shown that 99 per cent of the *Salmonella* in liquid egg are killed during spray-drying where the air inlet temperature is 121° C. (250° F.) and the air outlet temperature is between 60° and 66° C. (140°–150° F.). The greater the initial contamination, the greater the survival upon drying. It should be pointed out that this work was not done under plant conditions.

*Salmonella* may be introduced into dried egg powder by human carriers or by contaminated eggs. In this connection it should be pointed out that there is no known case of *Salmonella* being introduced by human carriers. Mallman, Ryff, and Matthews<sup>39</sup> have reviewed the literature of the large variety of types of *Salmonella* which have been found to occur in the common fowl. They themselves isolated 11 different species of *Salmonella* from the intestinal content or feces of chickens. In spite of the large amount of work

undertaken, the source of *Salmonella* in dried egg powder apparently remains unknown. Recent studies by Gibbons and Moore<sup>36</sup> gave considerable evidence that eggs were the source of the organism.

Gibbons, Moore, and Fulton<sup>40</sup> have investigated the growth of the *Salmonella* group and of *Staphylococcus aureus* and four strains of *Streptococcus pyogenes* in liquid and reconstituted eggs. Group A streptococci did not grow in liquid egg and the investigators point out that this is probably one explanation why they are not usually found in egg powder. *Salmonella* organisms and *Staphylococcus aureus* grew under proper temperature conditions and incubation periods, but in commercial practice the danger would be remote under adequate bacteriological supervision.

If reconstituted eggs are allowed to stand overnight there would be danger of multiplication. Work by Haines and Elliot<sup>5</sup> indicates that for this reason the reconstitution period should not exceed 4 hours.

The British Ministry of Food has suspected that dried eggs might be responsible for *Salmonella* food poisoning in Britain.<sup>30</sup> Every epidemiologist is aware of the difficulties connected with obtaining conclusive evidence of the source in cases of food poisoning, and no convincing evidence has been presented to justify the suspicion that dried whole egg powder might be responsible for *Salmonella* food poisoning. In this connection, Gibbons and Moore<sup>32</sup> state that eggs have not been incriminated in *Salmonella* poisoning. However, on June 11, 1945, the British Ministry of Food issued an order<sup>41</sup> to control the use of dried eggs in specified manufactured foods with the object of avoiding potential cases of food poisoning.

In general, bacterial flora in dried egg powder decrease during storage if

the humidity is not excessive. Tracy, et al.<sup>43</sup> and Hartsell<sup>27</sup> have shown that the bacteria count of the powder decreases as temperature and storage time increase. For instance, Tracy and his coworkers found that dried egg powder stored at  $-20.5^{\circ}\text{C}$ . ( $-5^{\circ}\text{F}$ .) had a higher count per gram than that stored at  $32.3^{\circ}\text{C}$ . ( $90^{\circ}\text{F}$ .), even after a period of  $1\frac{1}{2}$  years. Gibbons and Fulton<sup>31</sup> showed that dried egg powder stored at  $55^{\circ}\text{C}$ . ( $131^{\circ}\text{F}$ .) was practically sterile in 4 weeks. In this connection, it is interesting to note that Stuart, et al.<sup>44</sup> found that at a temperature of  $30^{\circ}\text{C}$ . ( $86^{\circ}\text{F}$ .) and below, bacterial death in dried whole egg powder of sanitary quality proceeded at a uniform logarithmic rate normal for bacterial population of material stored in a dry condition.

As for the death of specific organisms during storage of dried egg powder, Stuart, Hall, and Dicks<sup>33</sup> state that organisms of the coliform group remain viable during storage. Gibbons and Moore<sup>36</sup> showed that *Salmonella* organisms surviving dehydration operations die off during storage even at low temperatures. Haines and Elliot<sup>5</sup> reported that a coagulase-positive strain of *S. aureus* died out slowly at room temperature in whole egg powder.

Bacterial population is related to the moisture content of the dry egg powder. Haines and Elliott<sup>5</sup> state that bacterial growth is unlikely in egg powder containing less than 15 per cent moisture, and mold growth below about 10 per cent moisture content. Gibbons and Fulton,<sup>31</sup> on the other hand, found that at 5 per cent moisture levels there was an increase in molds. Stuart, Hall, and Dicks<sup>33</sup> reported that when the moisture content is 5 per cent or less, bacterial death appeared to be greater as the moisture content was reduced.

The temperature at which eggs are dried is an important factor in determining the quality of the product;

the lower the drying temperature, the better the physical qualities, but the greater the survival of bacteria. Thus, Gibbons and Fulton<sup>31</sup> have shown that a decrease of from 4° to 15° C. (39°–59° F.) in the temperature of the exhaust air from a spray dryer is accompanied by a 3 to 5 fold increase in the number of bacteria in the resulting powder.

Rapid cooling of the product after drying is desirable from the standpoint of physical quality. Johns<sup>30</sup> and Gibbons and Fulton<sup>31</sup> have pointed out, however, that such a technique means a higher bacterial count.

In some instances where liquid egg is pasteurized by passing through a pre-heater before spray drying, significant increases in bacterial population have resulted. Johns<sup>30</sup> investigated this and found that in such cases material had adhered to the walls of the pre-heater tubes, setting up a nucleus of infection. At temperatures less than 57.2° C. (135° F.) in preheaters multiplication of organisms will take place and for that reason pasteurizing temperatures of 60°–62.8° C. (140°–145° F.) are used. Tube heaters cannot operate at these temperatures and are not used in the United States.

*Nutritional aspects* — Bate-Smith<sup>45</sup> found that there was little loss of vitamin A by spray drying, but that there was a loss when eggs were tray dried. Hauge and Zscheile,<sup>46</sup> Hauge, Zscheile, Carrick, and Bohren,<sup>47</sup> Klose, Jones, and Fevold,<sup>48</sup> and Cruickshank, Kodicek, and Wang<sup>49</sup> obtained similar results with spray-dried egg powder. Bate-Smith, and Klose, et al. found that spray drying caused no loss of thiamine. The results of the work of Klose and his coworkers indicated that riboflavin, pantothenic acid, and niacin suffered no loss by spray drying.

Storage of dried egg powder brings about a loss of vitamins. Hauge, et al. found that the greatest losses of vitamin

A occurred in powder held at room temperature, such losses amounting to 40 per cent in 12 months. Warehouse storage caused a loss of 30 per cent. Klose, et al. reported greater losses at comparable temperatures. Low storage temperatures increase vitamin A retention. Cruickshank, et al.<sup>49</sup> found no loss of either vitamin A or D during storage in a nitrogen pack at 15° C. (59° F.) for 5 months.

Klose, et al. have found pantothenic acid and niacin to be quite stable during 9 months' storage. There was a slight destruction of riboflavin at storage temperature of 37° C. (98.6° F.) but essentially none at lower temperatures. Thiamine was found to be stable at storage temperatures of –9.4° C. (15° F.), but half of the potency was lost when the material was stored at 37° C. (98.6° F.) for 9 months. Cruickshank, et al. have shown that it is storage temperatures rather than high moisture content of the powder which detrimentally affects the retention of thiamine. There is an apparent inhibition of losses of vitamin A after 3 months' storage, for the rate of loss in Klose's work was greatest during the first 3 months, after which vitamin A seemed rather stable.

There is a paucity of data regarding the nutritive value of reconstituted egg powder. Herraiz and Herrero<sup>50</sup> report reconstituted dried eggs to be a good source of vitamin A, thiamine, riboflavin, and niacin.

#### DEHYDRATED FISH

Dehydrated fish should not be confused with salted, dried, or smoked fish. The former is prepared by steaming and grinding the fish and removing moisture under controlled conditions of humidity and temperature. During dehydration the fish may or may not be smoked. So far as known, fish is not at present being commercially dehydrated in the United States. In 1944

a plant was erected on the west coast of southern Florida for dehydrating mullet, but never got into commercial production. Some experimental work has been undertaken in the United States relative to fish dehydration,<sup>51</sup> but most of the research has been carried out at the Torry Research Station in Aberdeen,<sup>52, 53</sup> and by the Fisheries Research Board of Canada. Nearly all the work of the latter agency remains unpublished.

*Microbiological aspects*—Unpublished data by Shewan<sup>54</sup> indicate that pathogens of the food poisoning type are not usually present as a part of the normal flora of fish. During handling aboard ship the flora will be subject to change, but Shewan believes it unlikely that pathogenic cocci will be present in other than small numbers at this stage, since low temperatures brought about by icing are unsuitable for their growth. During subsequent handling for dehydration, the flora will again change, and may consist predominantly of cocci, of which from 15 to 30 per cent may be coagulase-positive *S. aureus*. From the standpoint of public health, therefore, it is important that the fish be thoroughly cooked prior to dehydration and that dehydration be carried out rapidly and at sufficiently high temperatures to prevent bacterial contamination or growth. The Torry Research Station at Aberdeen has pointed out that the standard hygiene in the dehydration of fish should be more like that of a modern dairy than that of the salt fish curing yard or fish meal factory; and that all steps in the processing should be carried out under competent bacteriological supervision.

According to Tarr,<sup>55</sup> unless dehydrated fish (containing 40 per cent fat) is stored at humidities less than 75 per cent (at temperatures of between 68° and 99° F.), mold will develop. Mold growth is unlikely unless the

relative humidity is 80 per cent or more, which corresponds to a moisture content of 17.5 per cent. At this moisture level, mold growth will be slow and limited. At 85 per cent relative humidity (corresponding to a moisture content of 19.5 per cent), bacteria will increase.

There are no bacterial standards in the United States for dehydrated fish. A Lend-Lease contract in 1944 specified a plate count of not more than 10,000 bacteria per gm. On the basis of research at Torry,<sup>56</sup> it was believed that, so far as dehydrated cod and haddock were concerned, a good product should not have more than 10,000 organisms per gm.

*Nutritional aspects*—Few published data are available relative to the vitamin content of dehydrated fish. Stansby<sup>57</sup> carried out feeding tests with rats on dehydrated cod, mullet, whiting, and carp and found that the dehydration process caused a loss of about 50 per cent of the thiamine and 65 per cent of the riboflavin. This loss took place largely in the cooking process and about half of each vitamin lost could be recovered in the "stick."

Martinek and Jacobs<sup>58</sup> have investigated the apparent digestibility of protein from dehydrated fish when fed to rats at a level of 9 per cent by weight in the basal diet. All the dehydrated fish investigated (cod, mullet, whiting, and carp) had an apparent digestibility of about 87 per cent. Stansby<sup>57</sup> also found that the dehydration process did not adversely affect either the nutritive value or the digestibility of the fish.

#### DEHYDRATED MEAT

The dehydration of beef and pork in the United States has been primarily a war measure. Accurate production figures are impossible to obtain, but purchases by the government reflect approximate production because dehydrated meat is not available for civilian use. From October to Decem-

ber, 1942, dehydrated pork purchases amounted to 1,264,720 lbs.; 1943, 16,450,536 lbs.; and in 1944, 11,992,409 lbs. No figures are available for dehydrated beef.

*Microbiological aspects*—There are no bacteriological standards in the United States for dehydrated meat. Specifications do, however, require a standard precooking treatment of "a minimum of 30 minutes at not less than 165° F. internal temperature."<sup>59</sup> The provisional bacteriological standard adopted by the Ministry of Food Advisory Bacteriological Committee states<sup>56</sup> "Conditions of manufacture shall be such that bacterial toxins are not formed. The dried product shall not contain organisms likely to be pathogenic to men by mouth, and shall have a bacterial content, as estimated by a 48 hour plate count at 37° C. on nutrient agar, not exceeding 10,000 per g." These specifications are in effect for all dehydrated meat now obtained by the British. The workability from a routine control standpoint of the provisions that the product "shall not contain organisms likely to be pathogenic to men" will undoubtedly be questioned by many American bacteriologists. Nevertheless, English workers are examining the meat for pathogens as a routine procedure.

According to researches by Haines and Elliott,<sup>57</sup> raw meat may carry a flora consisting of *Achromobacter*, cocci, coliform and *Proteus* organisms, and aerobic spore formers. These organisms will be destroyed by adequate steaming of the ground meat prior to dehydration. During subsequent tray-drying and dehydration, the bacterial count will again increase. Hankins, et al.<sup>58</sup> found that bacterial spores, although few in numbers, were the predominating microorganisms found in the dehydrated product. Gas-forming bacteria whose optimum growth was 37° C. (98.6° F.) and putrefactive

anaerobic bacteria were also found. Haines and Elliott could not find pathogenic organisms or *S. aureus* in their dried product. Their investigations in this respect were, however, limited.

It is quite likely that danger from food poisoning bacteria in dehydrated meat is controlled chiefly by the moisture content of the product, and so long as the moisture content remains at 10 per cent or below in any part of the product, the problem of bacterial food poisoning is probably nil. If dehydrated meat has a moisture content of less than about 15 per cent (calculated on a fat-free basis) microorganisms cannot develop.<sup>60</sup> Hankins, et al. found that food poisoning strains of *Staphylococcus* and *Streptococcus* failed to grow in the meat if the moisture content did not exceed 20 to 30 per cent. *Salmonella* did not grow in meat containing 50 per cent or less of moisture. *Clostridium botulinum* toxin formation occurred only in meat containing 30 per cent or more moisture. Some evidence was obtained that an increase in storage time and temperature had a tendency to increase the potency of the toxin developed later from surviving spores if they had the opportunity to function.

The above data imply that in the rehydration of meat there is apparent danger of food poisoning, if such rehydration is prolonged. It has been found that toxin formation from *Cl. botulinum* will take place in from 8 to 10 hours in reconstituted meat if spores are present in the dehydrated product.<sup>59</sup> Bate-Smith<sup>60</sup> states that the reconstituted meat should not be allowed to stand for more than an hour or two before being cooked.

In general, there is a decrease in the population of bacteria during storage. Experiments by Haines and Elliot suggest that the death rate of a coagulase-positive strain of *S. aureus* was slower in nitrogen than in air, and more rapid



at 37° C. (98.6° F.) than at 15° C. (59° F.). In this particular instance no significant difference was found between the rate of death at 2.0 and 4.5 per cent water content in air at 15° C. (59° F.). Hankins, et al. found that mold growth seldom took place on dehydrated meat containing less than 15 per cent moisture and that mold grew only with difficulty on fat meat.

*Nutritional aspects*—Hankins, et al. showed that during storage of dehydrated meat, particularly at high temperatures, there is an apparent breakdown of the proteins accompanied by a change in color and flavor. Such changes decrease the palatability. These workers also found the digestive coefficient of dehydrated pork to be 92 per cent, of dehydrated beef 88.7 per cent, and of dehydrated mutton 90.9 per cent, as compared to 80.3 per cent for dried skim milk and 89.4 per cent for dried eggs. Rice and Robinson<sup>61</sup> report that the protein quality is not significantly reduced during dehydration.

Poling, Schultz, and Robinson<sup>62</sup> state that the biologic value of the proteins of dehydrated beef and pork was not significantly below that of the raw commodity when fed at 18 per cent protein levels.

Hankins, et al. found relatively small losses of riboflavin and niacin during dehydration, but losses of thiamine amounted to about 50 per cent. Poling, et al., on the other hand, found a retention of thiamine and pantothenic acid ranging from 76 to 63 per cent, while retention of riboflavin amounted to 90 per cent. These results were confirmed by Rice and Robinson<sup>63</sup> who report a 76 per cent retention of thiamine, a 92 per cent retention of niacin, and 68 per cent retention of pantothenic acid in dehydrated beef. Pork retained 63 per cent thiamine, 92 per cent niacin, and 73 per cent pantothenic acid during dehydration. There was no

loss of riboflavin in dehydrating either beef or pork.

During storage, loss of thiamine is quite rapid. Rice, Beuk, and Robinson<sup>64</sup> found that only 15 per cent was retained after storage for one week at 48.9° C. (120° F.). Hankins, et al. have reported complete destruction in 8 weeks at 43.4° C. (110° F.). Losses are less at lower temperatures. This confirms the findings of Rice and Robinson<sup>61</sup> who reported a 29 per cent retention of thiamine in pork stored at 26.7° C. (80° F.) for 219 days, but complete destruction at higher temperatures. Rice, et al.<sup>65</sup> found that the loss of thiamine in dehydrated pork was roughly proportional to the moisture content between 0 and 6 per cent moisture levels. There was a rapid loss at storage temperatures above 37° C. (98.6° F.). At 3° C. (37.4° F.), the loss was about 4 per cent.

There appear to be insignificant losses of niacin after 9 months' storage even at elevated temperatures.<sup>60</sup> Rice and Robinson<sup>61</sup> report little or no loss of niacin, riboflavin, or pantothenic acid in dehydrated pork or beef stored for 219 days at 37.2° C. (99° F.). Above storage temperatures of 48.9° C. (120° F.) there was a slow loss of riboflavin and pantothenic acid.

Although the packing of certain dehydrated vegetables in an inert gas aids in retention of certain vitamins, this does not seem to be the case with dehydrated meats. Rice, et al., for instance, found that vacuum-nitrogen or carbon dioxide packing did not increase thiamine retention during storage.

So far as can be determined from published reports and private communications, there have been no cases of food poisoning arising from the consumption of dehydrated foods. Nevertheless, *Salmonella* and *Staphylococci* have been found in certain types of dehydrated foods, and it is believed that foods containing such organisms

should be considered potential vectors of food poisoning.

It is recommended that the committee consider the advisability of establishing bacterial standards for dehydrated foods, particularly for dried egg powder. If it is desired to establish such standards, it will be necessary to determine whether a plate count or total microscopic count, along with an examination for the absence of groups of organisms likely to be pathogenic, would be advisable in all classes of dehydrated foods under consideration. It is believed that the most effective procedure for determining the advisability and necessity of establishing standards would be by means of a symposium at the Annual Meeting of the Association.

#### REFERENCES

1. von Locsecke, Harry W. *Drying and Dehydration of Foods*. New York: Reinhold Publishing Corp., 1943, 302 pp.
2. *Vegetable and Fruit Dehydration. A Manual for Plant Operators*. U. S. Department of Agriculture. Miscel. Pub. 540. 1944, 218 pp.
3. Harper, L. K. Problems Facing Soup Producers. *Quick Frozen Foods*, Feb., 1944.
4. *Weekly Digest*. Food Distribution, Jan. 1, 1944, p. 5.
5. Haines, R. B., and Elliot, E. M. L. Some Bacteriological Aspects of Dehydrated Foods. *J. Hyg.*, London, 43:370-81, 1944.
6. Vaughn, R., Stadtman, T. C., and Kueneman, R. W. A Microbiological Survey of the Vegetable Dehydration Process. (To be published.)
7. Hucker, G. J., Pederson, C. S., and Brooks, R. F. The Sanitation of Food Plants. *New York State Agr. Expt. Sta. 63rd Ann. Rep.*, pp. 17-18.
8. Prescott, S. C. Some Bacteriological Aspects of Dehydration. *J. Bact.*, 5:109-25, 1920.
9. Prescott, S. C., Nichols, P. F., and Powers, P. Bacteria and Molds in Dehydrated Vegetables. *Am. Food J.*, 17, 6:11-16, 1922.
10. Clague, J. A. Microbiological Examination of Dried Foods. *Food Research*, 1:45-49, 1936.
11. Kinter, J. H., and DeLay, P. D. Sanitation Aspects of Vegetable Dehydration Plants. *Army Vet. Bul.*, 37, 1:12-10, 1943.
12. Jones, A. H. The Microbiological Aspects of Dehydrated Vegetables and Fruits. *Food in Canada*, 3, 7:16-18, 20-23, 1943.
13. Dunn, Lt. Col. C. G. The Army's Dehydrated Vegetable Program. *Quartermaster Review*, Nov., Dec., 1943.
14. Adam, W. B., Horner, G., and Stanwerth, J. Changes Occurring During the Blanching of Vegetables. *J. Soc. Chem. Ind.*, 61, 6:96-99, 1942.
15. Morgan, A. F., Carl, B. C., Hunner, M. C., Kidder, L. E., Hummel, M., and Peat, J. M. Vitamin Losses in Commercially Produced Dehydrated Vegetables, Cabbages, Potatoes, Carrots and Onions. *Fruit Prod. J.*, 23:207-11; 219-221, 1944.
16. Tressler, D. K., Moyer, J. C., and Wheeler, K. A. Losses of Vitamins Which May Occur During the Storage of Dehydrated Vegetables. *A.J.P.H.*, 33:975-79, 1943.
17. Moyer, J. C., Stotz, E. H., and Ferris, H. M. Nutritive Value and Palatability of Dehydrated Vegetables. *New York State Agr. Expt. Sta. 63rd Ann. Rep.*, pp. 17-18.
18. Doty, D. M., Zscheile, F., Harper, R. F., Lewis, W. R., Foster, G. H., Canan, Inez, and Redfield, Gail. Effect of Dehydration and Storage on Chemical Composition and Cooking Quality of Carrots. Abstract of paper for 1945 meeting of Institute of Food Technologists. *Food Packer*, 26, 7:74, 1945.
19. Titus, H. L., Brown, O. J., Jr., Wertheim, J., and Skofield, L. M. Retention of Vitamin C in Foods. *Chem. Products*, 8:3-5, 1944.
20. Tiller, F. M., Litkenhouse, E. E., and Tuberville, W. Infrared Dehydration of Meats and Vegetables Tested. *Food Ind.*, 15, 10:77-79; 121, 1943.
21. Pavcek, P. L., and Elvehjem, C. A. Work of the Committee on Food Composition. *J. Am. Dietet. A.*, 20:216-19, 1944.
22. Neuman, W. K., Wilson, R. V., and Van Wazer, F. P., Jr. Recent Developments in the Packaging and Storing of Dehydrated Foods. *Proc. Inst. Food Tech.*, 1944, pp. 42-53.
23. Heberlein, D. G., and Clifcorn, L. E. Vitamin Content of Dehydrated Foods. Effect of Packaging and Storage. *Indust. & Engin. Chem.*, 36:912-17, 1944.
24. Beardsley, C. L., Prindle, R. F., and Stevens, H. P. Retention of Vitamins in Dehydrated Foods during Storage. *Proc. Inst. Food Tech.*, 1943, pp. 208-25.
25. Chace, E. M. The Present Status of Vegetable Dehydration in the U.S.A. *Ibid.*, 1942, pp. 70-89.
26. Fenton, F., and Barnes, B. Losses of Vitamins Which May Occur During the Cooking of Dehydrated Vegetables. *A.J.P.H.*, 33:799-806, 1943.
27. Hartsell, S. E. Studies on the Bacteriology of Stored, Dried Egg Powder. *Food Research*, 9:505-11, 1944.
28. Purchase Conditions for Dried Whole Eggs. *Form PB-364a*. War Food Administration. Feb. 28, 1945.
29. Egg, Powdered. Quartermaster Corps. *C.Q.D. No. 117B*. Dec. 12, 1944. Superseding *C.Q.D. No. 117A*. Jan. 28, 1944.
30. Johns, C. K. Microbiological Aspects of Egg Powder. *Sci. Agr. (Le Revue Agronomique Canadienne)*, 24, 8:373-79, 1944.
31. Gibbons, N. E., and Fulton, C. O. Dried Whole Egg Powder VII. Effect of Temperature and Moisture on the Bacterial Content of Liquid and Dried Egg. *Canad. J. Research*, 21, D:332-39, 1943.
32. Gibbons, N. E., and Moore, R. L. Dried Whole Egg Powder. IX. Occurrence and Distribution of *Salmonella* Organisms in Canadian Powder. *Ibid.*, 22, F:48-57, 1944.
33. Stuart, L. S., Hall, H. H., and Dicks, E. E. Storage Changes in Spray-Dried Whole Egg Powder. *U. S. Egg and Poultry Mag.*, 48:629-33; 635, 1942.
34. Lepper, H. A., Bartram, M. T., and Hillig, F. Detection of Decomposition in Liquid, Frozen and Dried Eggs. *J. Assoc. Off. Agr. Chem.*, 27, 1:204-23, 1944.
35. Johns, C. K., and Berard, H. L. Direct Microscopic Method in Bacteriological Control of Dried Whole Eggs. *Food Research*, 9:396-99, 1944.
36. Gibbons, N. E., and Moore, R. L. Dried Egg Powder XII. The Effect of Drying, Storage and Cooking on the *Salmonella* Content. *Canad. J. Research*, 22, F:58-63, 1944.

37. Bernstein, S., Saphra, I., and Strauss, L. Frequency of Occurrence of *Salmonella* Species. *J. Infect. Dis.*, 69:59-64, 1941.
38. Seligmann, E., Saphra, I., and Wassermann, M. *Salmonella* Infections in Man. *Am. J. Hyg.*, 38:226-49, 1943.
39. Mallmann, W. L., Ryff, J. F., and Matthews, Evelyn. Studies on the *Salmonella* Group—Method of Isolation and Pathogenicity of Strains Occurring in the Intestines of Chickens. *J. Infect. Dis.*, 70: 253-62, 1942.
40. Gibbons, N. E., Moore, R. L., and Fulton, C. O. Dried Whole Egg Powder XV. The Growth of *Salmonella* and Other Organisms in Liquid and Reconstituted Egg. *Canad. J. Research*, 22, F: 169-73, 1944.
41. The Dried Egg [Control of Use] Order. [S. R. & O. No. 627 of 1945.]
42. Haines, R. B. The Bacteriology of Dehydrated Foodstuffs. *Dehydration. United Kingdom Progress Rep.*, Jan., 1943.
43. Tracy, P. H., Shewung, John, and Hoskisson, W. A. Effect of Various Temperatures of Storage upon the Chemical Physical Properties of Powdered Egg Yolk as Related to Its Use in Ice Cream. *Food Research*, 9:126-31, 1944.
44. Stuart, L. S., Gnesline, H. E., Smart, H. F., and Dawson, V. T. Effect of Storage Temperature on Bacteria in Egg Powder. *Food Ind.*, 17, 10:100-01; 192-200, 1945.
45. Bate-Smith, E. C. Dehydrated Meat and Eggs. *Chem. & Ind.*, 61, 32:342, 1942.
46. Hauge, S. M., and Zscheile, F. P. Effect of Dehydration on the Vitamin A Content of Eggs. *Science*, 96:536, 1942.
47. Hauge, S. M., Zscheile, F. P., Carrick, C. W., and Behren, B. B. Homogenized Liquid and Dried Eggs. Stability of Vitamin A and Carotinoids During Dehydration and Storage. *Indust. & Engin. Chem.*, 36:1065-68, 1944.
48. Klose, A. A., Jones, G. I., and Fevold, H. L. Vitamin Content of Spray-Dried Whole Egg. *Ibid.*, 35:1203-05, 1943.
49. Cruickshank, C. M., Kodicek, E. E., and Wang, Y. L. Vitamins in Spray-Dried Eggs. *J. Soc. Chem. Ind.*, 64:15-17, 1945.
50. Herraliz, M. L., and de Alvarez Herrero, H. G. *Rev. asoc. argentina dictol.*, 1:46-8, 1943; *Chem. Abstr.*, 39:2822, 1945.
51. Hamm, W. S., Butler, C., and Heerdt, M., Jr. Food Fish Dehydrate Well. *Food Ind.*, 16, 6:76-8; 120-1, 1944.
52. Reay, G. E., and Cutting, C. L. *Dehydration. United Kingdom Progress Rep.* Sect. III. Fish and Fish Products, 1-16, 1942.
53. Cutting, C. L., and Reay, G. E. The Dehydration of Fish. Part I. General. *Chem. & Ind.*, 6:47-50 (Feb. 5), 1944.
54. Shewan, J. M. The Bacteriology of Dried Fish. Unpublished. Torry Res. Sta., Aberdeen. Quoted in *United Kingdom Progress Rep.*, 1942. Sect. IX, p. 9.
55. Tarr, H. L. A. Changes in Moisture, Microorganisms and Volatile Bases in Dehydrated Fish During Processing and Storage. *Fisheries Research Board of Canada. Progress Rep. Pacific Coast Stations*, 57:16-20, 1943.
56. Haines, R. B. Dehydration. The Bacteriology of Dehydrated Foodstuffs. *United Kingdom Progress Rep.*, Jan., 1943. Section IX, p. 8.
57. Stansby, M. E. Dehydration of Fish. *Fishing Gazette. Ann. Rev. No.*, 61, 12:182, 184, 1944.
58. Martinek, W. A., and Jacobs, B. The Nutritional Value of the Protein of Some Dehydrated Fishery Products. *Fishery Market News*, 5, 8:12, 1943.
59. Hankins, O. G., Barbella, N. G., Batchelder, Esther L., Hollingshead, R. S., Kraus, E. J., Noel, W. A., and Rogers, L. A. Meat Dehydration. *U. S. Dept. Agr. Circ.* 706 (Aug.), 1944.
60. Bate-Smith, E. C. Drying of Meat. Dehydration. *United Kingdom Progress Rep.*, Jan., 1943. Section II, p. 9.
61. Rice, E. E., and Robinson, H. E. Nutritive Value of Canned and Dehydrated Meat and Meat Products. *A.J.P.H.*, 34:587-92, 1944.
62. Poling, C. E., Schultz, H. W., and Robinson, H. E. The Retention of the Nutritive Quality of Beef and Pork Muscle Protein During Dehydration, Canning, Roasting and Frying. *J. Nutrition*, 27: 23-33, 1944.
63. Rice, E. E., and Robinson, H. E. Vitamin B-Complex Studies on Dehydrated Meats. *Food Research*, 9:92-99, 1944.
64. Rice, E. E., Beuk, J. F., and Robinson, H. E. The Stability of Thiamine in Dehydrated Pork. *Science*, 98:449, 1943.
65. Rice, E. E., Kauffman, F. L., Schultz, H. W., and Robinson, H. E. Preliminary Study on Stabilization of Thiamine in Dehydrated Foods. *Food Research*, 9:491-99, 1944.

HARRY W. VON LOESECKE, *Chairman,*

U. S. Department of Agriculture,  
Washington, D. C.

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ROE E. REMINGTON, PH.D.

R. C. SHERWOOD, PH.D.

# Teamwork for Industrial Health\*

J. J. BLOOMFIELD, F.A.P.H.A.

*Senior Sanitary Engineer, Industrial Hygiene Division, Bureau of State Services, U. S. Public Health Service, Bethesda, Md.*

LIKE most thoughtful citizens, I am sure that you have been thinking a good deal of the atomic bomb. Even though we may not fully understand the significance of our progress in the new science of atomic energy, we do know that we stand on the threshold of a brand new civilization. Once we accept this idea we can begin to act constructively. We can begin to plan.

Now you will probably ask yourself just what the atomic bomb has to do with industrial health. I am sure that you will agree that whatever affects society as a whole affects industrial health, especially in a highly industrialized country such as ours. The atomic bomb was made possible only through united action. Indeed, the "secret" of the atomic bomb was the coördination of all resources—scientific, industrial, and governmental. This is really the great lesson of the war in relation to industrial and community health. Science produces "miracles" *only* when it is applied. The medical and health sciences have never yet been applied in the intense and coördinated way that produced the atomic bomb. We really do not know as yet what "miracles" of health our scientific knowledge could produce if we applied it universally.

Even when used in a meager way, the health sciences produce remarkable results in increased efficiency of the human machine, in more harmonious re-

lationships, especially between labor and management, and in a greater capacity for earning, as well as in the saving of life and the promotion of health. Let me give you just one example of what the application of our present scientific knowledge can accomplish in the field of industrial health alone.

Early in 1941, at the beginning of our defense program, the War Department placed the joint responsibility for the organization and maintenance of industrial health services in the large government-owned munitions plants upon the Army Medical Corps and the Industrial Hygiene Division of the U. S. Public Health Service. Since many of the plants were at that time still in the process of construction, it was possible to begin planning for a good industrial health program at the blueprint stage. The health program in the munitions plants was carried out for the entire duration of the war. Through frequent inspections, our professional staff saw to it that safe and healthful working conditions were maintained and that the workers obtained the benefits of the best practices in the field of personal hygiene. As a result, outstanding success was achieved in the reduction of health and accident hazards in this vital industry. Disability and death rates from exposure to toxic explosives and related chemicals have been gratifyingly low. [See note on page 268.]

\* Presented before the Kingsport Safety Council meeting, Kingsport, Tennessee, September 14, 1945, and before the Women's Group Action Council, Winston-Salem, North Carolina, October 9, 1945.

## ELEMENTS OF AN INDUSTRIAL HEALTH PROGRAM

We have known for some time that if

we are to maintain and improve the physical and mental well-being of our workers we must not only be concerned with the working environment but also with conditions outside the workplace. We know that efforts to insure a safe and healthful working environment may often be nullified by unfavorable conditions in the community. That was brought forcefully to our attention in many dramatic incidents during this war. Let me give you just one instance which will illustrate my point.

At the very height of the war, I happened to be on the West Coast visiting the health department of a state which was active in the production of all types of fighting ships. At the time of my visit, there was an outbreak of dysentery in a small shipyard employing 8,000 workers. About 10 per cent of the working force, or 800 persons, were affected. Those workers not sick were on the point of walking out on strike unless something was done to control the situation. The source of the trouble was easily found. The old septic tank, designed to serve about 500 people, had overflowed and was discharging the sewage from 8,000 people into a lake, on the shores of which the yard was situated. Through some mishap, probably a cross-connection, polluted lake water was siphoned back into the shipyard drinking water—results, 800 sick workers, some of them in the hospital. Failure of the community to provide adequate sewage disposal facilities was the true cause of the outbreak.

I think this one example clearly illustrates that the health of industrial workers is a matter of concern not only to industry but to the community at large. In dealing with the worker, therefore, we must adopt a concept of "the total man," if we are to keep him on the job and enable him to contribute to the life of the community his utmost in healthful living and intelligent citizenship.

If we accept this concept concerning the industrial worker, then we must provide at least the elements of a good industrial health program. Broadly, the program aims to achieve and maintain three goals: (1) a safe and healthful working environment; (2) a healthful community environment; and (3) healthy, well adjusted men and women engaged in industrial production. To accomplish these purposes, four types of services are needed.

First, the provision of a safe and healthful working environment. This involves study of actual and potential hazards to determine the danger from poisonous dusts, gases, and fumes. Processes and materials may have to be changed to safeguard workers, or special equipment provided. Sanitation in the plant is equally necessary.

Second, the provision by industry of medical and nursing services and a properly equipped dispensary. First aid treatment of illnesses and accidents was the original function of industrial medical departments—a service made necessary by state workmen's compensation laws. These services in the larger industries now have been expanded to include preplacement examinations for applicants. The importance of this examination is increasing, because the placement of large numbers of handicapped persons requires that the worker be carefully fitted to his job. The medical departments in large industries have further broadened their scope to provide a continuous preventive program including periodic health examinations, which vary in frequency and type according to the requirements of the job. In small plants, where a full-time medical service is not feasible, part-time services may be obtained from private practitioners of medicine, and an industrial nurse may be employed full time. To supplement the medical service, large industries are also employing dentists to give emergency

treatment and regular dental examinations. In the majority of industrial medical services, patients are referred to private physicians and dentists for complete treatment when the illness is not related to the job. A health education program organized coöperatively by the medical and personnel departments in coöperation with the employees is another feature of a complete plant program.

Third, the provision of feeding facilities for workers on all shifts, assuring them of adequate, inexpensive meals.

A fourth essential may be called welfare services. These include mutual benefit plans, Blue Cross hospital insurance plans, and other methods for the purchase of medical service by workers and their families. Counseling services to help individuals solve their personal problems, organization for recreation, and other activities that contribute to morale and healthful living may be included.

Your state industrial hygiene service is specifically designed to help reduce industrial disability resulting from conditions of employment. As you all know, however, the major share of industrial disability, nearly 90 per cent of the total, is due to common ailments, such as colds, digestive diseases, and certain chronic disorders which do not necessarily originate from employment. These problems must be attacked where people work as well as where they live. Only by intensive effort on the part of all public health agencies, the medical profession, industry, and labor, shall we reduce the waste of life, money, and productivity. Small industries are especially in need of such coördinated effort, for they are unable to provide these basic services by themselves.

#### AVAILABLE RESOURCES FOR INDUSTRIAL HEALTH

Accomplishing the objectives of the program I have just outlined, calls for

teamwork. All available resources must be put to work. It is just plain common sense that no one organization is ever going to obtain optimum health and safety single handed. The complexity of services, equipment, facilities, and personnel needed to translate a blueprint into healthier men and women proves the point. The use of available resources obviously requires close coöperation. Let us see what some of these available resources are.

To begin with, we have scientific research in the health and medical fields, which is a continuous source of new knowledge for the promotion of health and the prevention and cure of disease. The Public Health Service has been conducting such research for more than three decades, and it is safe to say that in so far as occupational diseases are concerned, we now have the knowledge which, if properly applied, would control or prevent all of them. This vast store of information on industrial health hazards has been obtained with the coöperation of industry and labor, in the conduct of our numerous field and laboratory studies.

Next, we have the federal, state, and local industrial hygiene services throughout the nation. Today there are approximately 50 such services functioning in 39 states, in Hawaii, and in the Tennessee Valley Authority. These units employ nearly 400 specialists and expend approximately 1½ million dollars annually. Although most of the state and local units are new—many of them having been created during the past 10 years—they already have made a remarkable record in the prevention and control of industrial disabilities.

Next we have the private practitioners of medicine, acting individually, or collectively through their county and state medical societies. The Council on Industrial Health of the American Medical Association has promoted the organization of committees on industrial health

among the various county and state medical societies. These committees actively develop a better understanding of industrial hygiene problems among all physicians, and especially enlist their interest in giving part-time service to small industries. In several communities, the county medical society committee on industrial health has taken the leadership in cooperative programs—programs with trade associations, labor unions, and other community agencies for the development of health services in local industries. I shall tell you something more about this work later.

In order to obtain many of the general health services in your community, you have, of course, your local health department. There are also the public welfare agencies, and voluntary agencies such as the Red Cross, the social hygiene societies, the local tuberculosis association, and so on. Then, too, there are various types of mutual sick benefit plans, Blue Cross hospital insurance plans, and other methods for the purchase of medical service by workers and their families. There are organizations for recreation and certain community hospital facilities. These and many other agencies, which I need not mention, are at your beck and call and need only to be brought together in an integrated plan to render important services related to health.

I can think of no community better prepared than your own in which to try out such a plan. Coordinated effort is practical, and pays dividends. If the plan has the cooperation of all those involved, it will be sure to have permanency. Such programs are even today functioning in a few of our communities. However, these are the exception rather than the rule. The rule in most of our towns and cities is for each organization to go its own way, often ignoring the wealth of scientific information which is waiting to be

tapped. There are a number of reasons why we permit this gap between our knowledge and its application to our daily lives. One of the reasons has to do with certain deficiencies or needs in health work.

#### MAJOR DEFICIENCIES IN INDUSTRIAL HEALTH

I should like to mention briefly some of the major health needs which exist to some extent in all parts of the country. To begin with, we have nowhere nearly the number of trained personnel we require for public health work; that is, physicians, engineers, nurses, dentists, chemists, health educators, and other professional workers. Many communities today do not have enough medical man power and facilities to meet current demands; for that matter they never have had enough. The same is true in regard to some of the other professional health workers.

Another major deficiency is in the provision of hospitals and health centers, including facilities for the treatment of such long-term illnesses as tuberculosis and mental disease. Surveys made by the Public Health Service show that the construction of small, well equipped hospitals and health centers to serve rural communities is a particularly urgent need. However, it is especially important that all the hospitals of a state be fitted into one overall plan, in order that the highest type of complete service may be rendered to the people of the area.

There is also a major deficiency in our sanitary facilities, such as public water supplies, sewerage systems, and the like. Estimates show that there are over 10,000 American communities which need to improve their water supplies and sewerage systems, and 5 million rural families in need of better sanitary facilities. There are still many counties, nearly 1,200, without basic public health services, while many of

the remaining 1,800 are operating with greatly depleted staffs.

There is a need for more research not only in industrial hazards but also in diseases of major concern to industrial workers—respiratory infections, heart disease, and cancer—all of which are taking the heaviest tolls in ill health and premature deaths.

We have much to accomplish in connection with industrial health hazards, especially in these days of reconversion. We shall have on our hands the labor force drastically changed by the war. In other words, we have more women in industry, more older workers, and more young workers, to say nothing of veterans with service-connected disabilities and other persons in need of rehabilitation. The problems of conversion in 1940 are with us again in this reconversion period of 1945-1946. Management is doing its utmost to reconvert to consumer production as rapidly as possible. Again, as in 1940, time is precious. Some of the problems already brought about by reconversion are due to the technologic improvements effected in industry by the war itself. For example, the use of light metals, such as aluminum and magnesium, has brought in its wake a serious exposure to fluorides. The growth in the fluorescent lighting industry is associated with exposure to certain compounds and operations which have already caused several deaths and many serious cases of poisoning. The same is true of the greatly expanded plastics industry, which will grow to even greater proportions in the next few years. This is also true of the synthetic rubber industry.

The war gave an opportunity to demonstrate successfully the practical use of industrial x-rays for the detection of flaws in finished products. Some x-ray installations are already using voltages as high as 2 million. It is imperative that these installations be so

designed, operated, and maintained that stray x-rays will not injure workers in the vicinity of the testing machine. The introduction of many new chemicals has resulted in a greater increase in occupational skin diseases and in systemic poisoning.

Perhaps one of the most important problems before us today is that of insuring complete health and medical services to all the people. Much has been said regarding a national medical care program and much more will be said. I am wondering if most people, however, are aware of the need for a broader plan to insure maximum health services. Along with provisions for the purchase of medical care, we must consider the needs for hospitals, diagnostic clinics, and health centers, and must increase the amount and scope of public health services in order to carry out the important task of preventing sickness and unnecessary death. We must make sure that every family in the country has safe water and adequate sanitary facilities. To accomplish these purposes, we must have more trained professional personnel, more scientific research in health and medical fields.

It is not within the province of the present discussion to indicate just how this can be done. Our country has had enough experience in coöperation among federal, state, and local governments, the professions and private agencies, to indicate that the means to provide a comprehensive national health program can be found and will be found. Moreover, the program can be developed in accordance with the needs, resources, and viewpoint of the several states. In fact, a number of states have created commissions to plan for post-war health facilities and services. It should be remembered that the initiative must come from the individual communities and states, themselves.

I have mentioned the problems of small plants. I said that small indus-



tries which are unable to provide the basic services for themselves are more dependent on community health agencies than the larger plants. We should be particularly concerned with their problems, which have been with us always, like the proverbial poor. This brings us to the question of how we should organize for better industrial health in a community.

#### ORGANIZING FOR INDUSTRIAL HEALTH

The war has taught us that the physical and mental well-being of all our people is our greatest asset. Health is wealth—but wealth is not necessarily health. Industry reaches out into practically every home through its employment of labor, so that the health of industrial employees is also a community problem, requiring well organized community action. This is especially true at the present time when we are on the threshold of a new era—the era of human engineering or “humanics.” We have just passed from the strictly machine engineering age, in which attention was given primarily to the improvement of machinery and processes, to a human engineering era, in which we are concerned with the improvement of the human organism, physically and mentally. This transition is strikingly represented today by the various plans of reconversion, in which consideration is being given to the reconversion of men, as well as machines. An example is the establishment of community rehabilitation for returning veterans.

Now, health is everybody's business; people are “employees” and “employers” only part of the day. The remainder of the time they are plain everyday citizens, just like you and me. Their influence on community action is tremendous and should be used to bring about the provision of community services essential to the maintenance of health. Hence, in any community

planning for health, all groups should be represented. This planning moreover should be for total community health and not for in-plant health services, alone.

Neither I nor any “expert” can give a blueprint of how you should organize for industrial health, nor should I wish to do so even if I had such a blueprint. To be effective and workable, a plan has to be developed by the citizens of the community itself. However, I may be able to leave with you a few guiding principles which have been useful to others in community organization for industrial health.

To begin with, there is a need for a unified approach. An industrial health program needs a grass roots basis. Success can be best accomplished with the help *of* people and not *for* them. The second essential is to survey the needs of the community, in other words, to define your problems. Perhaps this may best be accomplished with the aid of your state industrial hygiene service, which has qualified professional personnel to conduct a community-wide study of the various industries in your area, the health hazards of the working environment, and the present facilities within the plants for coping with the various problems revealed.

Defining a problem is only half the battle. You will next need to make an inventory of the various resources which I have described as essential for community action. This can probably be done through a committee of citizens on which will be represented management, labor, your state and local health department, and other community organizations, both official and nonofficial. And, finally, you will want to plan a program to meet the needs, including the means to implement such a program. Let me give you an example of what was accomplished in just one community with regard to industrial health.

In one community, a local trade association, together with the county medical society, launched a campaign for the establishment of an industrial health service which would keep the plants in the area producing at the peak, and maintain the general welfare of the workers on a high level. An industrial health committee was appointed, including on its membership representatives of the various organizations I have just mentioned. As a first step the state industrial hygiene division made an inventory of the physical environment and existing health services of the industries in the community. It was found that most of the plants were small in size and that very few of them had adequate provisions for medical services. In addition, many of them had occupational health hazards in need of correction. Of the 97 plants in this area, only 3 provided cafeteria services for their employees. The survey clearly indicated the need for organized industrial health services in the local industries and provided suggestions for the development of such services. At about the same time, the medical school of the state university offered a post-graduate course in industrial medicine and hygiene for physicians and nurses of the area. The industrial health committee, sponsored by the local chamber of commerce, held a series of meetings to lay the foundation for this coöperative venture. At these meetings members of the health committee presented detailed facts on the costs of the services and other pertinent data. Later a two man team visited the plants to make specific recommendations. Emphasis was placed on what could be accomplished by a good program in those plants which showed high disability rates. Employers were encouraged to introduce the various elements of a sound industrial health program which I have mentioned earlier. Since most of the plants were small, each received

the part-time services of a physician and a nurse, usually paid for on an hourly basis. The amount of time devoted to each plant depended on the population of the plant.

As a result of this program 11 of the larger companies employing approximately 9,000 people now have integrated medical or health units in special departments to give reasonably complete service. Two years ago, only 3 of these plants had such services. Sixty-one of the industries employing about 12,000 workers have some degree of medical service. At least 5 in every 7 plant employees have group health insurance, ranging from partial to complete coverage. The health insurance covers medical, surgical, and hospitalization costs. At least 4 in every 5 employees have had a chest x-ray examination for tuberculosis. The tuberculosis program was extended to include all the children in the area who were over 14 years old. Most of the workers in this community together with their families have been impressed with the real importance of proper nutrition. As a result of the overall program, absenteeism has materially decreased in those plants having health units.

There are other such plans throughout the country which, although not alike in every detail, have certain common denominators. They recognize the tangible benefits to employer and employee through increased production and larger incomes. All have had the support of the local trade association. Today some 250 chambers of commerce have active health committees. These committees are working closely with the local medical societies. All the plans have been developed with the understanding and support of the public. Each one has found the plant survey, as conducted by trained industrial hygienists, an important factor in defining the problems and in pointing

the way for their solution. All of them have included personal contact with management and labor and have emphasized the value of health services for employees of small plants.

#### SUMMARY

We have demonstrated in our recent war effort that the people of this nation are capable of moving mountains through teamwork and coordinated effort. Furthermore, all of this has been achieved through democratic processes. We have learned that in dealing with the worker we must adopt the concept of "the total man," if we are to bring to him the benefits of modern medicine and hygiene. This, we have seen, requires that we provide for the worker a safe and healthful environment in his place of employment, adequate medical and nursing services in a properly equipped dispensary, such services to include replacement and periodic health examinations, and general health education. The provisions of feeding facilities in the plant and of essential welfare services are also requisites of a good program. Assistance in developing these fundamental services is available in our communities through the many resources which have been developed during the past ten years. What is needed to harness all this potential power is a coordinated pro-

gram in which all of the people, not only employers and employees, will take an active part.

This may seem a gigantic task, but the war has proved that this country can do the impossible. We have the brains, the man power, and the natural resources to do it. We have come out of this war the greatest military and industrial nation in the world. Surely in the peaceful years, we shall use fully our potential strength to create the healthiest nation in the world.

NOTE: For example, in the fiscal year 1945, there were only 3 deaths from TNT poisoning among approximately 100,000 employees engaged in TNT operations. The most hazardous TNT exposures were reduced to safe limits through the use of modern engineering practice. In World War I, the facilities of this country produced 40 per cent of the military explosives used by the Allies; in those plants, there occurred 230 deaths for every billion pounds of explosives manufactured. In the present war, United States facilities produced 95 per cent of all military explosives used by the Allies; only 5 deaths for each billion pounds of explosives occurred. These figures speak eloquently for the application of industrial hygiene.

# State Participation in the Evaluation of Local Health Services

L. P. WALTER, M.D., M.P.H.

*Director, Local Health Services, Texas State Department of Health, Austin, Tex.*

THE Texas State Department of Health has adopted the Evaluation Program of the American Public Health Association as a device for improving the quality and quantity of public health work throughout the entire state. Promotion of the *Evaluation Schedule* on a state-wide basis was undertaken only after its value had been definitely proved in a few communities.

Throughout the years, some Texas communities had periodically prepared *Evaluation Schedules* and submitted them for grading during the regime of the Health Conservation Contest and the National Health Honor Roll. Three years ago, when the Association changed the emphasis of the Program by encouraging participation of local units only with and through state health departments, 8 Texas communities submitted schedules and were included in *Health Practice Indices 1941-1942*, 18 communities were reported in the 1943 issue, and 34 in the 1943-1944 edition.

The extent to which a state should participate in the evaluation of local health services may depend on the degree of responsibility for administration of the program in the local areas. There is wide variation in public health administration throughout the United States. In some areas, local officials assume most of the responsibility for financing and operating the full-time health services; in other areas, the state department of health assumes most of the responsibility for their operation.

Between these two extremes there are many differences.

In Texas, the State Department of Health has assumed the leadership in the promotion of full-time local health services. The territory of the State of Texas covers about one-eleventh of the United States, and this vast area is divided into 254 counties, 60 of which are served by full-time local health service. A wide experience over a long period of time proved that unless the State Department of Health stimulated some of the local communities to the realization of the need for better public health service, practically no progress would be made. Responsibility for administration of the public health program in most Texas communities is divided between the local appropriating agencies and the State Department of Health. Since the funds appropriated by the Texas Legislature are inadequate for expansion of the program, much needed grants-in-aid are accepted from the federal government. These funds are allocated to local communities in accordance with the rules and regulations formulated by the federal government.

The 60 counties in Texas receiving full-time local health services are covered by 47 health units. In each of these health units, at the present time, at least 50 per cent of the funds for operating expenses must come from the local appropriating agencies. In many units the ratio of local funds is much

greater than 50 per cent. However, no health unit receives over \$50,000 per year from the State Department of Health. It is, therefore, not only the responsibility of the local appropriating agencies, but also the responsibility of the Texas State Department to evaluate periodically the public health services that are rendered.

When a modern health unit is established with full-time qualified personnel, financed largely from local funds, there is usually more local interest in the efficiency and economy of its operation. Even in such areas, where the public health program is primarily the responsibility of the local communities, the state health department can at times render valuable consultative assistance in program planning and in meeting emergencies. In order to render a service which will be respected by the local communities, a state department of health should have proper equipment and be manned by highly trained personnel.

It is impossible to render adequate services unless the state department of health is informed at all times relative to the public health needs through the state. These needs cannot be known accurately except by means of a periodic evaluation. An occasional visit to a community will not produce the needed information. Random reports received from interested citizens may conflict. Complaints sent to the state department by local officials may be biased because of political influence. Newspaper reports concerning local public health affairs are frequently inaccurate. When facts concerning local public health conditions are obtained in an irregular haphazard manner there is no basis for comparing the health program of one county with that of another. A comparison which is statistically sound is desirable when recommendations are made for allocation of funds, placement of specialized

personnel, and in many other activities from the state level. An annual evaluation will show the need for economy in the use of all funds appropriated for public health. There may be four or five governmental jurisdictions within a county asking for state financial assistance in setting up a full-time health service. If *Evaluation Schedules* are prepared, duplication of services is made obvious.

The American Public Health Association, in cooperation with the Texas State Department of Health, has prepared "blue-prints" for a minimum public health program in Texas.\* This program calls for establishment of 80 health units. These units, in many instances, are made up of several counties and, unless the State Department of Health has some tangible documentary evidence to show the need for multi-county units, difficulty may be experienced in answering the questions which arise in the organization of such units.

By studying the *Evaluation Schedules* and *Health Practice Indices*, the State Department is able to view the public health picture as a whole. The *Indices* serve as a guide for demonstrating to newly recruited health officers the needs and activities of particular areas, and are an aid in fitting the physician's special aptitudes to community needs.

The first *Evaluation Schedules* which were prepared by most communities in Texas were not completely executed because the health unit and other agencies did not have their records established in such a manner that the information could be obtained. Marked improvement was shown in succeeding schedules, which may be attributed in part to the inauguration of a standardized record system through the state, and to assistance given the local units by two technical field clerks who have

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\* Emerson, Haven. *Local Health Units for the Nation*. New York: Commonwealth Fund, 1945.

been given special training in the preparation of the *Evaluation Schedule*. Many requests are made by the local communities for the services of the technical field clerks, and by careful arrangement of itineraries the department is able to supply this assistance.

In Texas the preparation of the *Evaluation Schedule* is placed entirely on a voluntary basis, and there has been enthusiastic response. The *Schedules* vividly show where there is a conflict between the official and non-official agencies. Frequently the *Schedule* is a means of eliminating many unnecessary attempts to carry on programs which should be under the official health department.

It is true that some health officers when they see the *Evaluation Schedule* for the first time state that it is too long, takes too much work, and is "a foolish idea." Others immediately see the value of the device and grasp the opportunity to use it in the improvement of their programs. After the health officers have assisted their communities in filling out the *Schedule* for several years, they all agree that the time and energy expended have been worth while. Health unit directors recently returned from military service find the *Evaluation Schedules* and *Health Practice Indices* excellent sources of information as to what has transpired during their absence. In planning their future programs, the *Evaluation Schedules* should show the greatest needs in their communities.

Through the use of the *Schedule*, the local health officer can readily determine whether or not the community is making progress in recognized public health activities by making annual comparisons. The facts can be presented to the local appropriating agencies, and frequently additional appropriations for the advancement of the program can be secured.

As a means of community health

education, the *Evaluation Schedule* and *Health Practice Indices* can be utilized in many respects. For example, the health officer can use these publications in joint meetings with other agencies, such as welfare, hospital, and public works groups. The Texas State Department of Health has been actively engaged in using the *Indices* in a state-wide health education program.

For in-service training purposes the State Department of Health has prepared lantern slides of the charts in *Health Practice Indices*. Periodically, the State Department sponsors a general meeting of health unit directors, and by means of lantern slide demonstrations, the health officers can readily visualize which communities are making the most progress in solving urgent public health problems. Where two or more health officers have similar problems, they can hold conferences which are mutually beneficial.

The American Public Health Association has coöperated in every respect with the Texas State Department of Health in the preparation of the *Schedules*. In our opinion the evaluation should be carried on through the State Department of Health in order to avoid duplication and conflicts, and the personnel at the state level should be trained in the methods suggested by the American Public Health Association in order to visualize the entire scope of the program.

Following an invitation from the Association last year, the State Health Officer of Texas sent a group of representatives to an Institute on the Evaluation of Public Health Practices conducted by the School of Public Health at the University of Michigan in Ann Arbor. At this Institute representatives from ten states were given opportunity for the study of *Evaluation Schedules* and were trained in grading the reports.

*Evaluation Schedules* in Texas are

handled in the following manner: Four blank schedules are sent to each community; one is used as a work sheet, one completed copy is filed in the local health unit, one is sent directly to the American Public Health Association, and one to the Texas State Department of Health. Last year, the *Schedules* were graded by both the American Public Health Association and the Texas State Department of Health. The same standards were used in the

grading and there was remarkable similarity in the final results.

The American Public Health Association has announced that it will continue to render this service to the various states.

It is hoped that the local communities and the state departments of health will continue to utilize to the fullest extent these tools for improvement in the quality and quantity of public health work.

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## Coördination of Voluntary Health Agencies Is a Live Issue

*Voluntary Health Agencies: An Interpretive Study*, familiarly known as the Gunn-Platt Report, is starting a wave of "town meetings" throughout the country. Although it has been off the press only six months, many health organizations have held forums of executive members to discuss its implications and recommendations — the Onondaga Health Association and the Hartford Visiting Nurse's Association to mention only two examples.

Other agencies have scheduled board member meetings to discuss the study and to ponder its "recommendations to revitalize local voluntary health agencies by means of effecting coördinated health planning and simplifying and unifying appeals for public support," among others. In these discussion meetings,

board members are testing their readiness to "adapt their efforts to the changing realities," and "to abandon forms and cling firmly to realities." The Boston Health League and Pennsylvania Planned Parenthood Federation are among agencies that have had this type of soul searching.

But the study has had discussion in other circles as well. The *Survey Monthly* devoted its entire issue of October 15 to a discussion of the various aspects of the report in seven articles by public health leaders. The *American Journal of Public Health* and *New York Medicine* have discussed it, as well as such varied national magazines as *The Nation*, the *New Republic* and *McCalls*. It has also had a wide discussion in newspapers.

# Observations Concerning the Growth of Three Species of *Shigella* on Bismuth Sulfite Agar

MILDRED M. GALTON AND NANCY J. COLLINS

*Bacteriologists, Bureau of Laboratories, State Board of Health, Jacksonville, Fla.*

A REVIEW of the literature has failed to reveal any reports recommending bismuth sulfite agar for the isolation of the members of the *Shigella* group. It is generally recognized that no significant growth of these organisms occurs on this medium.<sup>1</sup> The *Difco Manual*, 1943, states that generally members of the dysentery group are inhibited, although some strains of Flexner and Sonne do develop. Some investigators indicate that they are completely inhibited. Sellers<sup>2</sup> regards this as one of the disadvantages of bismuth sulfite agar. In view of these facts it seems feasible to report our observations.

For the past 3 years bismuth sulfite agar, Difco (W. B.) and S. S. agar have been used for direct plating of all feces cultures in the Florida State Board of Health Laboratories. During the first 2½ years we found an occasional culture of *Shigella alkalescens* on W. B. agar, but the number was so small it seemed of no significance. In December, 1944, a definite increase in the number of alkalescens isolations was noticed, the majority of which were found on W. B. agar, while the S. S. plates were negative. At this time pure cultures were plated on W. B. agar and the colonies closely observed. We found that they were quite varied in appearance, ranging from very pale green to a dark, brownish green, smooth and glistening.

Some are raised, ameboid in shape, and mucoid in appearance, while others are flat and round. Colonies with dark green center and lighter green periphery are also formed. The predominating type found almost consistently from directly plated feces cultures is a medium green colony, smooth, glistening, slightly raised, and frequently ameboid in shape.

TABLE 1

*Results of 136 Shigella alkalescens Isolations*

<i>S. alkalescens</i>	<i>S. S. W. B.</i>	
Positive	65	108
" on W. B. only		71
" " S. S. "	28	
" " " and W. B.	37	37

We continued to pick colonies of the types described above and in July, 1945, isolated 5 cultures of *Shigella paradysenteriae*, Boyd 88.\* Of these, 3 were negative on S. S. agar. The colonies were very similar to those of *S. alkalescens*; however, in pure culture they were not as varied in color and form, the light green with slightly darker green center, flat and glistening type being predominant. One culture produced brownish green raised colonies with crater-like centers. Other Boyd 88 cultures in our collection produced luxuriant growth when plated from a pure culture on W. B. agar.

\* Identification confirmed by Dr. K. M. Wheeler, Connecticut State Health Department Laboratories, Hartford, Conn.



The third species of *Shigella* that we have found on bismuth sulfite agar is *Shigella dispar*. Colonies of this type also resemble those of *S. alkalescens*. The identity of 2 of these cultures has been confirmed.\*

While *S. alkalescens* is frequently found in normal persons, more recent reports indicate that it can also cause sporadic cases or epidemics of dysentery and gastroenteritis.<sup>3-5</sup> Therefore, since W. B. agar is so widely used in direct plating of stool cultures, it seems

notable that a member of the *Shigella* group apparently grows better on this medium than on S. S. agar. The fact that 2 other species of *Shigella* have been isolated on W. B. agar warrants further observation.

#### REFERENCES

1. Connecticut State Department of Health, Bureau of Approved Methods EN-1, 1945.
2. Sellers, T. F. Practical Procedures in the Laboratory Diagnosis of Typhoid and Clinically Related Fevers. *A.J.P.H.*, 27:659, 1937.
3. Neter, E. The Genus *Shigella* (Dysentery and Allied Species). *Bact. Rev.*, 6:1-36, 1942.
4. Weil, A. J. Progress in the Study of Bacillary Dysentery. *J. Immunol.*, 46:13, 1943.
5. Stuart, C. A., Rustigan, R., Simmermann, A., and Carrigan, F. V. Pathogenicity, Antigenic Relationship and Evolutionary Trends of *Shigella alkalescens*. *J. Immunol.*, 47:425, 1943.

\* Identification confirmed by Dr. C. A. Stuart, Brown University, Providence, R. I., and Dr. P. L. Carpenter, Rhode Island State College, Kingston, R. I.

## Good Health in 1945

The December, 1945, *Statistical Bulletin* of the Metropolitan Life Insurance Company might very well have been entitled "Count your blessings—one by one." It reports, for example, that the maternal death rate in New York City has declined 73 per cent since 1933 and about one-third since 1939 in the United States; that infant mortality in the United States declined to a record low during the war with the greatest relative improvement in the West South Central and Mountain States where the rates are highest; that death rates have continued to decline and the natural increase in population

to rise; that the number of marriages, which temporarily declined in 1944, rose again in 1945, with the Mountain and Pacific States having had from a 50 to 85 per cent increase each of the four years beginning with 1942.

The sour note in the statistical picture is a slight increase in fatal accidents due to the increase in motor vehicle accidents following V-J Day and a slight increase in home accidents (Watch that loose rug!). Occupational fatalities were kept at pre-war levels throughout the war and catastrophic accidents were fewer in 1945 than in 1944.

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## PLANNING FOR PARENTHOOD

OUR leading Review Article in this issue of the JOURNAL deals with a topic of great and increasing moment in the field of public health. Phenomenal advances in the reduction of maternal and infant mortality during the past quarter-century have been due chiefly to control of environmental factors, improvement in milk supply and in the general nutrition of mother and infant, and protection against microbic infection. We discussed in our February issue possibilities of further improvements as a result of recent progress in our understanding of blood chemistry as associated with the puerperal state. The health worker today is face-to-face with a residual of maternal and infant deaths related to more basic physiological factors. We are forced to the conclusion that future advance must depend not merely on how the baby shall be borne and cared for—but also on whether it should be conceived at all by a given woman at a given time. The logical progress of true preventive thinking leads us inevitably to the consideration of fertility control.

The decision whether childbearing is a relatively safe and wise adventure depends on many factors. At the Spartanburg County Maternal Health Clinic, 40 per cent of the patients are referred because of serious specific illnesses such as tuberculosis, syphilis, heart disease, nephritis, or pellagra; 30 per cent because of anemia or general debility; and 10 per cent for other medical reasons. Low economic status, alone, however, may be a sound contraindication for pregnancy, since our principle must be that no child should be born into a family where it cannot be provided with the essential conditions of healthful living without a strain upon other members of the family which will, in turn, menace their health. In a wider sense, the restraint of population increase within reasonable limits may be a primary requisite for the promotion of general community health in certain areas (as in Puerto Rico or India).

Dr. Stix's review cites ample and striking evidence of the practical effectiveness of the contraceptive procedures now available, a point which has been raised by certain captious critics. Even crude methods applied without special instruction may reduce pregnancy rates by 25-50 per cent. a result by no means

negligible; more reliable methods, applied under advice, reduce pregnancies by 80-95 per cent. Flexibility of procedures and their application to the psychology of individual couples should be strongly emphasized. For the careful studies which have provided our knowledge in this field we owe a very real debt to the late Raymond Pearl and to the investigators supported by the Milbank Memorial Fund, whose recent contributions have been of far-reaching significance.

Birth control is something that should work both ways. We do not "control" an automobile solely by applying the brake. No inconsiderable proportion of non-fertile families desire to have children, as evidenced by the number of adoptions in economically self-sufficient groups. This problem is a difficult one and requires association with well equipped and staffed general hospitals; but it should not be omitted from any comprehensive community program for planned parenthood.

Outstanding advances have been made in the general field of preventive birth control programs in such southern states as the Carolinas, Alabama, Florida, Mississippi, and Texas. The U. S. Public Health Service in 1941 indicated its readiness to assist a child spacing program undertaken by any state (where local laws do not interfere) on the same basis as any other part of its public health program. So far as the medical profession is concerned, Dr. Stix rightly says "For the women to whom pregnancy would constitute a serious health hazard, there is no choice for the physician but to offer the most effective contraceptive methods available, to perform a sterilization operation, or to counsel abstinence for long periods." The second of these alternatives is justified only in certain special cases, and the third is fraught with serious hazards from the standpoint of mental hygiene. The first is, in general, the method of choice. The way for advance is open along an important road toward higher levels of public health. Only in the states of Connecticut and Massachusetts does the iron hand of theocracy bar the road.

## THE NATION'S HEALTH

ON October 4, 1944, the Governing Council of the American Public Health Association adopted an official statement outlining a national program for the protection of the health of the people of the United States.<sup>1</sup> On November 19, 1945, President Truman sent a special message to the Congress on the same subject; and the general principles embodied in the President's message were embodied in a bill (S. 1606 and H.R. 4730) introduced by Senators Wagner and Murray and Representative Dingell, and in a bill introduced by Senators Hill and Burton (S. 191) and by Representatives Neely and Patrick (H.R. 2498, 2755). It would seem of interest, at this time, to compare these four documents and to see how far they coincide and wherein they differ.

*The Problem*—The problem to be solved was outlined in our A.P.H.A. statement as follows: "A large portion of the population receives insufficient and inadequate medical care, chiefly because persons are unable to pay the costs of services on an individual payment basis when they are needed, or because the services are not available." Special deficiencies were noted in regard to physical facilities, such as hospitals, health centers, and laboratories; number and distribution of personnel; number of qualified administrators; provision of organized local public health services; and adequate scope of scientific research.

President Truman says: "In the past, the benefits of modern medical science have not been enjoyed by our citizens with any degree of equality. Nor are they today. Nor will they be in the future unless government is bold enough to do something about it. People with low or moderate incomes do not get the same medical attention as those with high incomes. The poor have more sickness, but they get less medical care. People who live in rural areas do not get the same amount or quality of medical attention as those who live in our cities." He calls special attention to inequality in distribution of doctors and hospitals, to the need for development of public health services and maternal and child care, to the need for furthering research and professional education in the health field, to the importance of developing resources to meet the high and variable costs of medical care and to the problem of compensation for loss of earnings due to sickness.

*General Objectives*—The A.P.H.A. resolutions state that: "1. A national program for medical care should make available to the entire population all essential preventive, diagnostic, and curative services; 2. Such a program should insure that the services provided be of the highest standard, and that they be rendered under conditions satisfactory both to the public and to the professions; 3. Such a program should include the constant evaluation of practices and the extension of scientific knowledge."

The President's message says that "Our new economic bill of rights should mean health security for all, regardless of residence, station, or race—everywhere in the United States." Provisions for maintaining standards of quality, methods of establishing conditions satisfactory both to the public and to the professions and research will be discussed in succeeding paragraphs.

*Scope of Services*—The American Public Health Association statement suggests that, ultimately ("within ten years"), service should be comprehensive, including hospital care, services of general practitioners, and specialists, laboratory and diagnostic services, nursing care, essential dental services, and prescribed medicine and appliances. "At the outset, as many of the services as possible should be provided for the nation as a whole, having regard for resources in personnel and facilities in local areas. The scope of service should then be extended as rapidly as possible."

President Truman says that "a system of prepayment should cover medical, hospital, nursing and laboratory services. It should also cover dental care—as fully and for as many of the population as the available professional personnel and the financial resources of the system permit." The Wagner-Murray-Dingell Bill contemplates comprehensive personal health services, except for possible temporary limitations in the fields of nursing and dental care, and limitations on the period of hospitalization.

Our report considers it "imperative that the plan include and emphasize the provision of preventive services for the whole population." It calls for increased federal and state grants to extend public health services to all areas; and for study of methods to attain better coordination of health activities. President Truman states that "No area in the Nation should continue to be without the services of a full-time health officer and other essential personnel. No area should be without essential public health services or sanitation facilities. No area should be without community health services, such as maternal and child health care." The first title of the Wagner-Murray-Dingell Bill provides for far-reaching stimulation of such services by grants to states through the U. S. Public Health Service and the Children's Bureau.

The American Public Health Association statement says: "In so far as may be consistent with the requirements of a national plan, states and communities should have wide latitude in adapting their services and methods of administration to local needs and conditions." The President says: "Medical services are personal. Therefore, the Nation-wide system must be highly decentralized in administration. The local administrative unit must be the keystone of the system so as to provide for local services and adaptation to local needs and conditions."

*Financial Support*—Our 1944 resolutions state that "services should be adequately and securely financed through social insurance supplemented by general taxation or by general taxation alone" (since social insurance alone would exclude certain economic groups). The President recommends that the public health and the maternal and child health services be made more effective "by more generous grants to the states than are provided under present laws" (tax supported); and he recommends that the basic problem of personal medical care be solved "by distributing the costs through expansion of our existing compulsory social insurance system. . . . How much of the total fund should come from the insurance premiums and how much from general revenues is a matter for the Congress to decide." The contribution from taxation is provided for in the Wagner Bill, Title I, which deals with direct financial coöperation with the states in supporting public health services (Part A), maternal and child services (Part B), and payment for the personal medical care of needy persons (Part C). Prepaid personal health services for employed persons and their dependents are provided under a system of compulsory insurance in Title II, with the source of funds not specified, but indicated to be a combination of insurance premiums and general revenues. Federal grants for hospital surveys and construction under the Hill-Burton Bill would come from general revenues.

Our report calls for "services financed on a nation-wide basis in accordance with ability to pay, with federal and state participation, and under conditions which will permit the federal government to equalize the burden of cost among the states." This, is, of course, provided for under the Wagner-Murray-Dingell and Hill-Burton Bills. Grants to the states are adjusted to per capita income; even insurance premiums are substantially on an ability-to-pay basis. The President points out that the insurance "health fund should be built up nationally in order to establish the broadest and most stable basis for spreading the costs of illness, and to assure adequate financial support for doctors and hospitals everywhere. If we were to rely on state-by-state action only, many years would elapse before we had any general coverage."

*Administration*—The American Public Health Association program makes four specific recommendations in this field.

First, it calls for a single responsible administrative agency at each level—federal, state, and local, and adds that "the public health agencies should carry major responsibilities in administering the health services of the future." The Wagner-Murray-Dingell Bill places administrative responsibility at the federal level for prepaid medical care and all other phases of the program—except grants for maternal and child care and grants for the medical care of needy persons—under the Surgeon General of the U. S. Public Health Service. The system of grants-in-aid to state welfare agencies for the care of needy persons to be administered by the Social Security Board involves a primarily fiscal operation at the

national level. Both the Surgeon General and the Board are under the Federal Security Administrator. The latter provision is obviously essential, since plans cannot be made for spending funds unless the funds are available. Under the Hill-Burton Bill, the Surgeon General would administer the program at the federal level. Therefore the only deviation from the principles of our resolution lies in the continuance of the Children's Bureau as an independent federal operating agency. On the state and local levels the U. S. Public Health Service will, of course, continue to work through state and local health departments in its grants for public health services. It would have wide latitude in negotiating with state and local agencies for the prepaid personal service to employed persons and their dependents. The way is clear for utilization of state and local health departments, in so far as they are ready and competent to undertake such responsibilities. If the health functions of the Children's Bureau should be transferred to a new Department of Health and Welfare—as has been proposed—all parts of the program would be under one tent.

The second of our principles is that the administering agency should have the advice and counsel of a body representing the professions, other sources of services and the recipients of services. This aim is visualized by the President in his statement that "Locally as well as nationally, policy and administration should be guided by advisory committees in which the public and the medical professions are represented." It is spelled out in detail in the Wagner-Murray-Dingell Bill which provides for a National Advisory Medical Policy Council representing the professions and the public, to be appointed by the Surgeon General from panels of names submitted by the professional and other groups concerned and from the public. This Council shall establish special advisory technical regional or local committees or commissions. Its primary duty is to provide for "professional standards of quality to apply to personal health service benefits."

The third point made in our 1944 resolutions is that private practitioners in each local area should be paid according to the method they prefer—fee-for-service, capitation, salary, or any combination of these three. This is precisely the procedure embodied in the Wagner-Murray-Dingell Bill, the general method of payment in each local area to be determined by vote of the general medical and family practitioners (or general dental practitioners) in that area; and there is provision for other methods of payment to be used, as they may prefer, by minorities.

Finally, the American Public Health Association resolutions state that the principle of free choice should be preserved to the population and the profession. President Truman says: "People should remain free to choose their own physicians and hospitals. The removal of financial barriers between patient and doctor would enlarge the present freedom of choice." "Likewise, physicians should remain free to accept or reject patients. They must be allowed to decide for themselves whether they wish to participate in the health-insurance system, full-time, part-time, or not at all." "Our voluntary hospitals and our city, county, and state general hospitals, in the same way, must be free to participate in the system to whatever extent they wish." "Voluntary organizations which provide health services that meet reasonable standards of quality should be entitled to furnish services under the insurance system and to be reimbursed for them." The provisions of the Wagner-Murray-Dingell Bill are in full accord with these policies.

With these provisions in mind, we may return to the statement made by the

American Public Health Association in 1944 that national health services should be rendered "under conditions satisfactory both to the public and to the professions." The way in which the public chooses to accumulate funds to pay for medical service is a matter for the determination of the public, whose money is involved. The way in which that money is spent is, however, of obvious importance to the professions upon whose efforts the quality of service depends. The main issues here are centralization of administration in expert hands, provision for the expression of professional opinion in regard to policy, a method of payment for services rendered by practitioners and agencies satisfactory to them, and freedom of choice for all concerned. The safeguards on these four points outlined by the American Public Health Association are all included in pending legislation.

*Provision of Physical Facilities*—With respect to construction of hospitals, health centers, and laboratories, our report of 1944 advocated construction based on federal aid to the states and allowance for participation by voluntary as well as public agencies (with suitable controls). It advocated grants on a variable matching basis. It held that the U. S. Public Health Service should administer the program on the federal level and that grants should be in accord with the results of state surveys and master plans, or, in the absence of state plans, should follow a U. S. Public Health Service survey. Construction should be undertaken only where there was reasonable assurance of continued support and maintenance.

The recommendation of grants for developing such physical facilities, and precisely under these terms, is included in President Truman's message; and also in the Hill-Burton Bill, though there are differences of opinion whether all of the safeguards and controls are contained in this Bill. Amendments on these points will be under discussion when the House Committee considers the Bill passed by the Senate.

*Training and Distribution of Personnel*—The 1944 resolutions called for further federal assistance in the training of professional and auxiliary personnel and, particularly, of administrators; and for the application of financial stimulus to encourage service in rural areas. This point was emphasized in the President's message and is fully implemented in Titles I and II of the Wagner-Murray-Dingell Bill.

*Research*—Our resolutions called for increased funds to be used by the Public Health Service, by state and local health departments and other nonprofit institutions for research and demonstration; and suggested that grants for such research be made with the "assistance of competent professional advisory bodies." The President strongly recommends the support of research. The Wagner-Murray-Dingell Bill includes research and the performance of demonstrations as suitable subjects for federal aid under both Titles I and II. All such grants would be made in consultation with advisory councils.

In summary, it may be said that the President's message and the two principal Bills which embody it in concrete legislative form appear to be in complete accord with the program adopted by the American Public Health Association as to needs and major objectives; and in almost complete agreement with that program as to details of policy and procedure.

#### REFERENCE

1. *A.J.P.H.*, 34, 12:1252 (Dec.), 1944.

## THE TREATMENT OF INDUSTRIAL WASTES

A RECENT issue of *Sewage Works Engineering*<sup>1</sup> was devoted to a problem which deserves the serious attention of public health engineers and also of health administrators, since basic questions of general policy are involved.

J. K. Hoskins of the U. S. Public Health Service estimates that the inland waterways of the United States receive a volume of waste from domestic sewage equivalent to the raw sewage of 47 million persons; while these same waterways receive industrial wastes equivalent to the raw sewage of 55-60 million persons. According to M. M. Cohn, "These industrial wastes are as complex as the manufacturing processes and products that come from the industries which produce a great parade of goods and commodities—food, textiles, paper, leather, steel, alloys and other metals, chemicals, rubber and hundreds of other items of a vast nation. They represent the tailings of the materials produced, such as cannery, food wastes, paper-pulp wastes, dairy wastes; dirt and process wastings, such as wool scourings; oils and greases from such industries as slaughterhouses and machine shops; soap wastes from laundries; chemicals and dyes; acids from steel mills and coal mine drainage; and like materials too numerous to mention."

In many instances, proper treatment of industrial sewage makes possible the recovery of waste products whose value would far more than pay for the cost of treatment. F. W. Mohlman lists a large number of instances in which installation of adequate machinery would lead to profitable recovery of waste products and pay-off of the equipment cost in a few years. One plant loses 12 tons of acetic acid per day, which if recovered would pay for the cost of equipment (one million dollars) in about two years. Another loses 5-10 tons of grease per day, in these times of grease shortages. Another loses starch and gluten; another hundreds of barrels of oil per month; another a half-ton or so of copper per day. A considerable number of individual plants and a few trade associations are cited which have attacked such problems as these with intelligence and vigor. A. M. Rawn and H. W. Gehm cite examples of highly profitable recovery of sulfite wool wastes and pulp and paper mill wastes.

Obviously, by no means all industrial wastes can be treated in such a way as to yield financial gain. But—profitable or not—treatment of such wastes before discharge into public sewers or streams must be required in the public interest. Some untreated industrial wastes may work serious damage to the sewerage system itself through corrosive action; and nearly all of them, as D. E. Bloodgood tells us, interfere with the operation of sewage disposal plants. Where they are discharged into public sewerage systems, W. T. Knowlton points out, each industrial plant should be required to pay its share of the excess burden placed upon the disposal plant, on a basis of the additional load of biological oxygen demand and suspended solids involved. English experience shows that a reasonable basis for such charges can be readily worked out. Where the industrial wastes are discharged directly into a stream, public health and waterways authorities should require such preliminary treatment as will avoid menaces to health, creation of nuisances, or damage to aquatic life, and will protect recreational facilities.

The cost of such treatment is a fair and reasonable part of the cost of production. "The cost of wastes treatment is as much a cost of manufacturing as is the cost of the crude material and labor that go into the product." R. D.



Hook, however, calls attention to the fact that "Until there is reasonable uniformity in the requirements of the several states, such a solution to the problem is unlikely to be adopted because of competitive disadvantage." The U. S. Public Health Service might profitably undertake a systematic effort to secure such reasonable uniformity through cooperative state action.

## REFERENCE

1. *Sew. Works Eng.*, 16, 10 (Oct.), 1945

## WALLER SMITH LEATHERS

OUR Association has lost another of its distinguished leaders in the death on January 26 of Waller Leathers.

Dr. Leathers was born in Virginia in 1874. He was trained at the University of Virginia and took his medical degree there in 1895. Like Sedgwick, he began his career as a teacher of chemistry, biology, and physiology. He was on the faculty of various southern universities between 1896 and 1899; and joined the faculty of the University of Mississippi in 1899. Here, he served for a quarter of a century, as Professor of Physiology and Hygiene and organizer and Dean of the School of Medicine. During this period he was Director of Public Health for the State in 1910, and again from 1917 to 1924. Between 1924 and 1945 he was on the faculty of Vanderbilt University as Professor of Preventive Medicine and Public Health and as Dean of the Medical School (from 1928). He held many voluntary posts of far-reaching influence, as adviser to the Rockefeller Foundation, the Commonwealth Fund, the American Red Cross, and the United States Public Health Service.

Dr. Leathers was a nationally outstanding figure in medical education, serving as a member of the National Board of Medical Examiners for many years and as its President from 1930 to 1934 and from 1936 to 1942. He was active in the American Public Health Association, organizing and for many years directing the work of the Committee on Professional Education, and was President of the Association for 1940-1941. He was also a leader in the American Medical Association, holding the posts of Secretary (1920-1923) and Chairman (1923-1924) of its Section on Preventive and Industrial Medicine and Public Health. His connection with these two organizations was of material value in promoting good understanding and cooperation between them in the common cause of public health.

Waller Leathers was an ideal executive and a devoted public servant. He was conscientious and thorough in all that he undertook. His balanced judgment, his fairness and his reasonableness, inspired the confidence which made his wide and constructive influence possible.

## LETTER TO THE EDITOR

### TO THE EDITOR:

Because of your editorial entitled "The Test of King Solomon," which appeared in the November issue of the *American Journal of Public Health*, I thought you might be interested in the coöperative activities of the Washington Department of Public Instruction and the Washington Department of Public Health. I am, therefore, briefly summarizing our efforts to date.

Beginning in 1942 there was a concerted effort for the two state departments to work together toward a more coöperative and unified program. This start resulted from the meeting of the health officers' Records and Forms Committee with a committee from the State Department of Public Instruction to revise and plan for the Pupil Health Card and the Pupil Medical Record. The interpretation for the use of each of the cards was also published in booklet form. This brought to realization of both state departments and their local components that coöperation was fruitful and desirable.

In 1944 the State Department of Public Instruction undertook a demonstration project in conjunction with the State Department of Health and funds were obtained from the Kellogg Foundation for improving the overall school health program. In this coöperative effort, the State Department of Health made available to the State Department of Public Instruction a health educator to work full time in this coöperative program. This project resulted in workshops throughout the state for educators and for local health department personnel. It also resulted in the publication by the State Health Department of a *Guide to School Health Services*, which many of the

local health departments and school directors are now following.

The *Guide* undertakes to improve the school health program through the development of four broad phases:

1. To revise the curriculum so as to bring it up to date as far as scientific health information is concerned and to see that all students receive instruction in health matters, as well as to eliminate repetition.

2. To improve school health services, including nursing services, physicians' services, sanitarians' services, as well as other health department services which may be available.

3. To provide integration by interesting the local school administrator in the appointment of a health council or committee so that opportunities for teaching experience offered in health programs in the community may be utilized in the school curriculum and by providing an opportunity for students to observe as well as participate in these health programs of the community.

4. To interest the school administrator in designating or employing a school health coordinator whose responsibility would be to see that the three policies outlined above are carried out completely.

The major concern at present is to get the local health officer and his staff to meet with the school administrator and a good representation from the school staff to discuss and plan the local school health program. If these meetings can occur at least twice a year and if the policies laid down in the *Guide* are followed, adequate school health programs will eventually result.

In 1945 the Departments of Public Instruction and of Public Health appointed a Joint Committee on School Health. This joint committee discusses school health problems and lays plans for solving these problems. It also sees to it that this information is carried to their respective local organizations. A committee from the Depart-

ment of Public Health is currently working with a committee from the Department of Public Instruction in revising the latter's health and physical education curriculum.

I am happy to be able to say that the state departments, as well as the local

health departments and local school directors, are working more closely together than ever before in the State's history.

ARTHUR L. RINGLE, M.D.

*State Director of Health  
Seattle, Wash.*

#### TO THE EDITOR:

Through the medium of the American Journal of Public Health, I want to extend congratulations to Doctor Raymond S. Patterson on his section, "Selected Public Health Bibliography with annotations," emphasis on the

"annotations." His light touch certainly traps the reader into running through the whole section.

HELEN R. ODELL

11 South Lake Avenue  
Albany 3, N. Y.

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## Dr. Sawyer of UNRRA Reports on Poland

Dr. W. A. Sawyer, UNRRA's Director of Health, completed a two month tour of Poland early in January. He consulted both with Poland's public health officials and the UNRRA staff, visited hospitals, health centers, and medical schools, and lectured on the discoveries and new methods in public health and medicine in five cities to doctors isolated from outside advances in medicine for six years.

One sentence epitomizes his report, "The spirit of Poland is as wonderful as the conditions are appalling." - Without food, shelter, clothing, without transport, without medical supplies, only courage and will are left.

Competent health officials both in the central Ministry of Health and in the field are using the facilities provided by UNRRA to cope with the difficulties. UNRRA is bringing in by truck bedsteads, mattresses, and blankets and sheets for hospitals; it is providing ambulances and trucks, many tons of DDT powder, supplies of diphtheria antitoxin, as well as professional health consultants.

A few sentences from Dr. Sawyer's report serve to paint the picture.

"I saw contagious disease sufferers lying on straw ticks and covered with blankets, threadbare and full of holes, which they had brought with them. No others were available. Such sheets as there are in the country are worn and patched. Adults get practically no milk. A standard meal in one hospital was small potatoes in their skins with a cereal gruel, with meat or an egg only once in a week or two. The work of doctors, whose numbers were heavily reduced by the war, is hampered by lack of transportation. I saw a patient being conveyed to a hospital in a horse-drawn farm cart. Lying on straw he was travelling the many miles to the nearest hospital in zero weather. Typhus is present in widely distributed areas, but not a serious epidemic yet. The most serious problem is that of preventing the spread of typhoid fever, a problem aggravated by the tremendous movements of population. In September there were 16,600 notified cases of typhoid. Poland is almost totally devoid of diphtheria toxoid. Tuberculosis is widespread."

These are the conditions which make Dr. Sawyer say, "The picture presented by Poland today is that of a country recovering from a degree of physical destruction and personal suffering hard to imagine and impossible to describe."

## Credit Lines

### SEEING IS BELIEVING

*Credit Lines is indebted to Dr. Raymond S. Patterson for this item*

This may be old-hat to people who gad about the country, but it is pure new-bonnet to one who is glued to his desk. It seems that the extension people at the University of Virginia induced a foundation to subsidize a traveling clinic through which a handful of community leaders were enabled to go out to visit a dozen interesting community ventures in public health and welfare. The "students" talked over their three-state Odyssey when they returned home from their wanderings and some of their conversation is recorded in "We Went to See for Ourselves . . .," the January 1, 1945, issue of the University of Virginia Extension.

Among the community enterprises they saw at firsthand were community recreation projects, schools, libraries, farmers' coöperatives, combined health districts. Then at the end of their trip they sat on the veranda and gossiped about health education with Lucy Morgan and a brace of her disciples. If you read the testimony, little doubt will remain in your mind but that here is a potent mechanism for stimulating better community health services in many sections of our country.

There is no hint of limit of the supply of this unusual publication or of the good nature of the publishers, so it is suggested that you write pronto to the Extension Division of the University of Charlottesville, Virginia, and ask for a copy of Vol. 22, No. 8, which is the identifying number of "We Went to See." While you are imposing on the generosity of the Division, ask for those issues of "New Dominion Series" which describe the community health

projects the peripatetic scrutinizers visited, and for good measure ask for No. 71 of that series, entitled "The Community and Health. Health Educators Make Planning a Two-Way Process."

### HEALTH EDUCATION AND DENTAL

#### HEALTH IN KANSAS

Credit Lines has just received two volumes, Health Education in Elementary and Secondary Schools, and Health Education in Colleges, outlining a coöperative health education program being carried on by the Kansas State Board of Health and the State Department of Education. The material has been prepared by the Policy-Making Committee on Health Education of the Kansas State Health Education Council, under the direction of Dr. F. C. Beelman, State Health Officer. Professor Clair E. Turner served as consultant. The two volumes are the basis for planning detailed and adapted programs by educational and health authorities and by coöperating professional and lay groups in the community. They outline the general principles and specific objectives upon which each school system can develop suitable curriculum and organization to make health education effective.

Also from Kansas—this time from Dr. Leon R. Kramer, Director of the Division of Dental Hygiene—comes an impressive Dental Health Program for Elementary and Secondary Schools. Perhaps its most important line is in parenthesis—"with special emphasis on community planning."

### A NEW STATE HEALTH BULLETIN IN MONTANA

Credit Lines has received the first

six issues of *Montana Health* which began in August, 1945, in celebration of the first birthday of the Montana Health League. This organization, made up of all the voluntary state health and medical agencies such as the Montana Hospital, Medical, Dental and Tuberculosis Associations, came into being in 1944 to fight a legislative proposal permitting osteopaths to practise surgery and medicine without limit in the state. Having learned the technique of coöperative action, it organized on a permanent basis and was effective also in campaigning for the permissive health unit law passed by the 1945 Legislature, a comprehensive Nurses' Practice Act, and establishment of a tuberculosis control division in the State Board of Health.

The first issue of *Montana Health* summarizes the purposes of the Health League, has an article by the State Epidemiologist, B. K. Kilbourne, M.D., on the new health unit law, another by the State Health Officer, W. F. Cogswell, M.D., on the organization of the State Board of Health, including an organization chart. Succeeding issues discuss a variety of public health and medical problems, presenting a variety of viewpoints.

THE NEW YORK MEDICAL SOCIETY  
FIGHTS ANTIVIVISECTION BILL  
INTELLIGENTLY

With the title, *Dogs, Drugs, and Doctors*, and the sub-title, *The March of Medical Progress will be Promptly Halted if Animal Experimentation is Prohibited by Law*, the New York State Medical Society issued a thrilling 35 page booklet that was valuable in opposing the recent Di Constanzo bill in the New York Legislature to restrict animal research. It contains a list of the medical problems that have been solved through research with animals as well as a much shorter list of unsolved problems requiring work with animals—

but these include cancer, leukemia, rheumatic fever, arthritis, and infantile paralysis.

The dramatic story is told of Dr. Victor Heiser's suggestion to test a proposed remedy for hookworm on a group of lobbying antivivisectionists at a Senate hearing in place of such testing on dogs. The ways in which a wounded G.I. of the late war was speeded to recovery and amputation prevented because of work previously done with dogs are reported. A careful understanding is built up of the care taken to avoid unnecessary pain to the animal—even more, that as careful operative and anesthetizing techniques as with humans are observed. Further, the benefits of animal research to animals themselves are explained, as in the case of black tongue in dogs.

Included with the pamphlet are two fliers, one listing the state senators and assemblymen with suggestions as to what to remind them of in this connection, and a reprint of Betsy Emmons' "The Case for Vivisection," another summary of the history and techniques of the antivivisectionists and of the work of Pasteur, Koch, Ehrlich, and many others whose work was aided by "man's best friend." The New York State Medical Society is to be congratulated for the effectiveness and high intellectual plane of its propaganda against what informed opinion everywhere regards as a misguided campaign.

LONDON IN 1944

The Interim Report of the County Medical Officer of Health and School Medical Officer for the year 1944 has just become available. It bears study, and with classic British understatement tells much of what can now be told as to rocket bomb damage. For example, "1944 was a trying year for Londoners." We find that no London County Council Hospital escaped damage, that a total of 5,000 beds were

destroyed and an additional 6,000 or 7,000 were temporarily out of action in a total of 660 "incidents"; that of 43,000 patients under treatment in Council hospitals at the end of 1944, 70 per cent were in mental hospitals, although the number declined over the previous year; that nutrition in the London schools was better than in 1938, that the death rate was 16.7 in contrast to 12.3 in 1939. In the meantime, however, it had risen to 18.7 in 1941 and fallen to 15.0 in 1942. An interesting page is one comparing population, birth and death rates, and other vital statistics in London and New York.

#### TRACHOMA CONTROL IN SAO PAULO

The story of efforts to control trachoma in the State of S. Paulo, whose population of about seven millions is more than one-sixth of all Brazil, is told in Dr. Silvio de Almeida Toledo's "The Struggle Against Trachoma in the State of Sao Paulo," published in 1944. It is detailed and comprehensive, charting the incidence of the disease and outlining the steps for its control, including a State Department of Trachoma, a Trachoma Research Institute, 34 dispensaries, and 20 rural units with their mobile sub-units that cover all the zones where the disease is prevalent. In 1943 nearly 55,000 persons were enrolled in these clinics and units. The author provides a short English summary of his volume which is written in his native Portuguese.

#### THE CHURCH SPEAKS UP FOR HEALTH INSURANCE

The Council for Social Action of the Congregational Christian Churches publishes a pocket size monthly called "Social Action." The November, 1945, issue is devoted to a discussion of national health insurance. Senator Pepper writes on "Legislation for Good Health"; Dr. Charles L. Hyser, Chair-

man of the American Dental Health Association, on "The Way to Dental Health"; Dr. Allan M. Butler, Associate Professor of Pediatrics, Harvard Medical School, on "The Charity Tradition in Medicine"; Francis W. McPeck, Director of the Department of Social Welfare of the Washington (D. C.) Federation of Churches, on "If One Member Suffer . . ." They all add up to support of the Wagner-Murray-Dingell Bill.

"We need to move from the position that health is purely a personal matter to the insight that it is often a social one. This will involve modifications in the pattern of our medical services and in our concept of the relation between health and society." John Donne is quoted to the effect that "Any man's death diminishes me, because I am involved in mankind."

The pamphlet includes a good short bibliography of recent material on the subject.

#### OUR NEIGHBOR CONSIDERS VETERANS

The *Journal of the American Dental Association* started the New Year right by making its January, 1946, number a "Veterans Issue." It discusses opportunities for dentists in public health, in the U. S. Public Health Service, in industry, and in education and research.

The lead article, "Economic Considerations in Reestablishing a Dental Practice" analyzes the distribution of dentists throughout the country and relates that distribution to per capita income and size of community. The three states with one dentist per 5,000 or more persons are also three of the four states with 1940 per capita income of less than \$300 and the three with less than \$600 in 1943. Income of dentists is also discussed both in relation to age of dentist and size of community. Incomes were largest not in cities of 100,000 or more, but in those between 25,000 and 100,000. The

earning peak is reached in the years between 40 and 45 without regard to size of community. The number of persons per dentist is consistently in inverse relation to size of community. It is a thoughtful presentation, giving to the returning veteran dentist the background economic information on which he can determine his future location.

Other articles discuss educational opportunities and the G. I. Bill of Rights, summarize wartime legislation affecting dentists, changes in drugs, chemicals, prosthetic devices and dental materials during the war period, and indicate the services of the Bureau of Public Relations available to the veteran.

#### SPREAD THE WORK—AND THE FUN

*Journal* readers have already been told of the regional organization of Health Education Section committees (*Journal*, May, 1945, p. 516). Early in 1945 a questionnaire was sent to all members by the Section Secretary so that work on section projects could be widely assigned and in relation to the diversified training and talents of the members.

The replies of 46 members, 5 per cent of the total, to the request for suggestions for improving the Section program have recently been analyzed. The most frequent reply, though variously stated, boils down to "Give more of us an opportunity to participate in Section activities." This is what Charles Hendry called "involvement" in his discussion of several health education projects at the Annual Meeting of the New York City Public Health Association in 1945, and it is the lesson to be learned by other Sections of the Association, and indeed other associations.

The actual language of several replies is interesting—"Use member participation in making the basic philosophy and do not continue the practice of hit-or-miss papers presented by names,

each talking to his own interest. This is praiseworthy always, but does not build an integrated program." "More participation by all members. More opportunity for clinic and group discussion and fewer papers by 'experts.'" "If they are good articles, print, bind, and distribute them, but use annual meetings for more valuable discussion." "Give new blood a chance. Except for the last year or two, the Section has been dominated by the same old guard. This questionnaire gives me hope that others can get in their two bits worth." "Utilize members more. Many new members have useful ideas." "Rotate committee membership and officers more generally." "Why not look under some fresher bushel baskets?"

Other suggestions most often given are for more regional meetings, for more bulletins or news letters informing members of Section activities, and for the development of strong local branches. The late war comes in for mention by way of suggestion that visual education so rapidly developed during the war should receive more Section interest.

One more quote, "Accent zeal, purpose, and spirit and methodology will take care of itself. Academic degrees are not the end of the journey, but barely the setting out upon it."

#### RESTAURANTS KNOW THE MINNEAPOLIS HEALTH DEPARTMENT

Dr. D. C. Gates, Director of Health Education of the Minneapolis Health Department, sends a copy of a recent letter from the manager of the Minneapolis Restaurant Association to its constituent members. The moral is, "the Health Department is operating for you." He then tells them that the Department is constantly studying the problems of sanitation in its million and one phases, and suggests calling its staff in for recommendations as to improvement in restaurant organization and

sanitation. And he lists 13 achievements of the previous year affecting the whole community.

Dr. Gates also sends us three attractive leaflets announcing a free food handlers' school which emphasizes, with appropriate and funnier than funny-page drawings, "that the health of the people is *your* responsibility," one entitled "Facts about Diphtheria," and a third, a congratulation card for the new baby that announces the immunization schedule.

#### SANITARY REQUIREMENTS FOR SCHOOL LUNCHESES

The Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association has recently published a statement describing the "Sanitary Requirements for School Lunches." Recognizing the importance of school lunches from the standpoint of nutrition and practical health education, the committee suggests protective measures to avoid contamination of food. Those measures are concerned with:

The condition, attire and conduct of the food handlers, condition of the premises and equipment, condition of the food, its preparation, care, and storage, including the special precautions to be taken with special types of food, and the supervision of personnel and premises.

The "ABC's of School Lunch Sanitation," and an essential list of questions with which the statement closes, should be in the hands of all lunchroom directors, principals, school physicians, school nurses, and health officers, as well as those directly handling food. Incidentally, the statement would be extremely useful in summer camps, industrial plant cafeterias, and in places where meals are served for short periods by inexperienced help, such as at county fairs, church suppers, and fraternal benefits.

Copies may be obtained from the

Chairman of the Committee, Thurman B. Rice, M.D., State Board of Health, Indianapolis 7, Ind.

#### WEST VIRGINIA IS HEARD FROM

"Safeguarding Your Health" is the title of a booklet telling about the community services of the Monongalia County Health Department. It serves a population of about 50,000, has been a full-time county unit since 1929, became a Public Health Training Center in 1936, and moved into a permanent health center building in 1944. The story is well told and illustrated.

#### PREMARITAL LAWS

We are indebted to Dr. Claude P. Brown, Assistant Director of the Pennsylvania Department of Health Laboratories for a copy of the November 1945 *Pennsylvania's Health*. This contains a compilation of premarital laws of the various states, prepared by the laboratories for the use of the doctor consulted by the bride and groom. We are informed that additional copies are available.

#### ADVERTISING FOR HEALTH OBJECTIVES

The *New York Times* of January 30, 1946, has an illustration of a significant new technique of securing public attention for a health objective. Under the title, "More Important Than Reaching the Moon: Child Health," the International Latex Corporation, in two columns of paid advertising, reprints a *Washington Post* editorial in favor of Senator Pepper's proposed Maternal and Child Welfare Act.

#### SERVICES FOR UNMARRIED MOTHERS

A joint statement on *Services for Unmarried Mothers and Their Children* has been prepared by the Children's Bureau, Bureau of Public Assistance (Social Security Board) and the American Red Cross. It is an 18 page booklet describing the present situation, the



plans and resources to meet the needs. Its purpose is to encourage coördinated planning and action to provide the needed service. Copies may be obtained from the Superintendent of Documents, Gov. Ptg. Off., Washington, D. C. Price, 10 cents.

#### WORTH ACQUIRING

*No, No, a Thousand Times No*—An illustrated leaflet, for use in well child conferences, that suggests many simple ways of reducing the number of noes a child receives. Play space of his own, precious or fragile knickknacks out of reach, and time to learn are all suggested, in the interest of the child's mental health. Bureau of Maternal and Child Hygiene, Hartford Health Department, Hartford 4, Conn.

*Food and Nutrition*—Prepared jointly by the State Departments of Health and of Education and four rural county schools as a textbook for teachers and pupils in California. Gives not only the basic principles of nutrition but also a brief history of man's quest for food and several appendices, including calorie tables for different foods and an extensive bibliography classified separately for teachers and children. California State Department of Education, Sacramento, Calif.

*Books on Home and Family Living—Michigan Public Health* of October, 1945, publishes this list prepared by the Michigan Department of Health's consultant in Parent Education. It lists both books and magazine articles, classifying them according to the various periods between infancy and maturity. State Department of Health, Lansing, Mich.

*A Man's Castle*—A National Pro-

gram for the Prevention of Home Accidents. Sponsored by 31 organizations from American Association for Adult Education to Zonta International, and including the American Public Health Association, this attractive booklet, liberally illustrated in red, tells all about home accidents. They kill 30,000 persons a year of whom 6,000 are under school age; fires in homes cost over a million dollars a year. Accidents can be reduced by community action, by proper house construction, design, and furnishing, by safe equipment and by education through newspapers, magazines, radio, and motion pictures. The goal—"Home is where all members of the family should always be able to find comfort and convenience, health and security, freedom from danger." Available without charge from the National Safety Council, 20 N. Wacker Driver, Chicago 6, Ill.

*Twenty-five Years of Effort and Service*—A silver anniversary report in a silver cover, and with excellent typography and illustrations, this description of the Cincinnati Public Health Federation (Bleecker Marquette, Executive Secretary) has fertile ideas for reporting on community stewardship. Public Health Federation, Cincinnati, Ohio.

*A Guide for Nurses* in the Nursing Care of Patients with Infantile Paralysis—a revision prepared by the Joint Orthopedic Nursing Advisory Service of National Organization for Public Health Nursing and the National League of Nursing Education. Published and distributed without charge by the National Foundation for Infantile Paralysis, 120 Broadway, New York 5, N. Y.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**When You Marry**—By Evelyn Millis Duvall and Reuben Hill. New York: Association Press, 1945. 450 pp. Price, \$3.00.

The authors of this volume are respectively on the staff of the National Conference on Family Relations and the Department of Sociology, Iowa State College. The foreword by Professor Ernest W. Burgess of the University of Chicago points out the timeliness of this functional approach to the teaching of marriage and family living. As he says, American youth by the hundreds of thousands are concerned as never before with problems of adjustment, often growing out of the large number of hasty marriages, but also from the group who have postponed marriage.

The book includes four parts, Anticipating Marriage, What It Means to Be Married, The Making of a Family, and Family Life Yesterday, Today and Tomorrow. Appendices include a Marriage Prediction Scale that fascinates adolescents and a list of recognized marriage and family counseling services.

The authors maintain that marriages which have been preceded by study and careful mate selection, and which are followed by skillful handling of adjustments, have high success rates. The book is best suited for reading and discussion at the college level, but also has meaning for high school groups under good leadership. The text is in easy style, well illustrated, interspersed with test questions set up in provocative form, and with excellent suggestions for further study.

Adolescents will profit by reading such chapters as that entitled "Dating: Practice Makes Perfect"—subtitles include, What to do on a date; Going Steady; How to break off with a Steady; Dating is Preparation but it is also Fun; What about Petting? etc. Especially well done from the mental hygiene angle is "Common Conflicts in Marriage."

This volume, in the opinion of the reviewer, represents the best of its class and marks a new achievement in what may be called sex hygiene in its most inclusive sense.

REGINALD M. ATWATER

**Safe and Healthy Living**—By J. Mace Andress, Ph.D., I. H. Goldberger, M.D., Margaret P. Dolch, and Grace T. Hallock. New York: Ginn & Company, 1945.

Book I—Spick and Span, 152 pp. Price, \$.84.

Book II—The Health Parade, 184 pp. Price, \$.88.

Book III—Growing Big and Strong, 252 pp. Price, \$.92.

Book IV—Safety Every Day, 258 pp. Price, \$.92.

Book V—Doing Your Best for Health, 298 pp. Price, \$.96.

Book VI—Building Good Health, 298 pp. Price, \$1.00.

Book VII—Helping the Body in Its Work, 314 pp. Price, \$1.04.

Book VIII—The Healthy Home and Community, 339 pp. Price, \$1.08.

This new edition of health textbook series for grades one to eight presents in typical fashion the most recent material on health and safety for class-

room instruction. The books are well illustrated with photographs of appropriate age groups in healthful experiences. Sketches and diagrams also enliven the printed word. The chapters are developed in the form of Units of Instruction. Each unit contains basic information, often in story form, questions for thought and discussion, tests, suggested activities, and a general word study exercise. A list of other books to read, a dictionary of health words, and a word index make valuable additions to the volumes.

The list of titles for each book are an indication of the enlivened contents. "Spick and Span," "The Health Parade," and "Growing Big and Strong" are apt titles for the early elementary grades. The titles for the fourth, fifth, and sixth graders offer increasing responsibility for the increasing years: "Safety Every Day," "Doing Your Best for Health," and "Building Good Health." The later elementary or junior high titles place greater emphasis upon home and community living, "Helping the Body in Its Work," and "The Healthy Home and Community."

These textbooks are written largely for the city school child with a good background of home and community living. Lack of understanding of many rural problems of living are evident. Like all school textbooks this series presents the accepted standards of health, and seldom helps the pupils to take what they have and build toward a more healthful way of living within their own environment. For the most part the suggested activities deal with real life situations and not the earlier fairy-story-busy-work type of activities. It is to be regretted that many of the references in the list of books to read, which appears in each volume, are not as modern and up-to-date as the general contents of the books themselves.

REBA F. HARRIS

Scientific Societies in the United States—By Ralph S. Bates, Ph.D. New York: Wiley, 1945. 246 pp. Price, \$3.50.

The reader of this volume will find not a directory in the usual meaning of the term, but an interesting account of the history and influence of scientific societies in the United States, including not only those of national scope but many state and local societies as well.

It is a general survey of the pattern of development of scientific organizations.

The material is divided into four periods: 18th century, 1800–1865, 1866–1918, 1919–1944. For each period the author depicts the main scientific trends and describes the beginnings and functions of the societies developing from the background of that period.

There is an extensive bibliography and also a good index.

EVA R. HAWKINS

Vitamins and Hormones — *Advances in Research and Applications. Vol. III. Edited by Robert S. Harris and Kenneth V. Thimann. New York: Academic Press, 1945. 420 pp. Price, \$6.50.*

This is the third volume of a series under the same title started in 1943 with the purpose of reviewing and appraising research in these fields. It is almost essential in these days of voluminous scientific literature to have a specialist evaluate the status of a subject and point out gaps and controversial issues with suggestions for further research. This is exactly what the authors of the nine articles in the present volume have done in well organized and completely documented form. The subjects covered in the present articles do not duplicate those of the previous volumes, although there is bound to be some overlapping even in the articles in this volume when

different authors discuss closely related subjects.

The titles and authors of the nine articles in Volume III are: The Interrelation of Vitamins by Moore; The Synthesis of B Vitamins by Intestinal Bacteria by Najjar and Barrett; Sulfonamides and Vitamin Deficiencies by Daft and Sebrell; Manifestations of Prenatal Nutritional Deficiency by Warkany; Growth Factors in Microbiology by Knight; Possibilities in the Realm of Synthetic Estrogens by Dodds; Chemistry of Anti-pernicious Anemia Substances of Liver by Subbarow, Hastings and Elkin; Mechanism of Action and Metabolism of Gonadotropic Hormones in the Organism by Zondek and Sulman; The Rôle of Acetylchlorine in the Mechanism of Nerve Activity by Nachmansohn.

This volume should be a valuable reference to help research workers and teachers in biochemistry, physiology, endocrinology, microbiology, nutrition and related medical sciences keep in touch with work reported in a wide variety of journals. HELEN S. MITCHELL

**Your Child from One to Six—**  
*Publication 30, Children's Bureau (rev. ed.). U. S. Department of Labor, Washington: Supt. of Documents, 1945. 147 pp. Price, \$.15.*

This is a complete revision of *The Child from One to Six*, a booklet, widely used in this and other countries since it was last rewritten in 1931.

The greatest difference between the previous and the new edition is a difference of approach rather than one of content. It reflects the trend of the past ten years in which the yardsticks applied to the growth and development of children have become more flexible and the "musts" of a child's performance at certain ages have become fewer.

Family relationships and their importance for all phases of the physical and mental development of children are stressed in each of the 29 chapters which are logically subdivided and cover the most important aspects of growth and development of preschool children. The language is clear, the print more liberally spaced and the text, illustrated by excellent photographs, should hold the interest even of those parents who are not accustomed to serious reading. This up-to-date and attractive booklet will be a popular educational tool in the hands of physicians, nurses, and other workers in the field of child care. One should be able to find it in all libraries, clinics, doctor's offices, and public health nursing bags.

FRANZISCA W. RACKER

**Cleveland Market Data Handbook**  
—By Howard Whipple Green. *Cleveland: Real Property Inventory of Metropolitan Cleveland, 1945. 69 pp. Price, \$2.50.*

This volume has been published under the direction of Howard Whipple Green, who is Secretary and Director of Statistics and Research, Cleveland Health Council, Cleveland, Ohio, and represents a unique and compact reference book of pertinent facts about Cleveland, including data on population, cost of living, employment and unemployment, telephones, automobile sales and registration, postal receipts, bank deposits and other financial data, new construction, mortgage finance, public finance and taxation. A series of tables and charts presents this material for the 35 year period since 1910.

The reviewer wishes that comparable data were available for all the larger cities and states, because they are essential in any comprehensive approach to public health.

REGINALD M. ATWATER

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

### How Much Do Children Eat?—

Three researchers have been measuring the increasing amounts of food that children manage to stow away during the years from infancy to age 10, and they find that the allowances set by the Food and Nutrition Board do not match up to the performance of children in middle class families. The researchers found a lot else, but that is one item that may stick in your memory.

BEAL, V. A., *et al.* Nutrition Studies on Children Living at Home. *Am. J. Dis. Child.* 70, 4:214 (Oct.), 1945.

### Commended for Its Wisdom—

Shall we teach the "facts of life" or that sex is bound up in emotion? A British writer makes the following daring assertion: "For my part I *do* believe that certain aspects of sex and sex behavior are sometimes rather ludicrous, that sex may sometimes quite properly be the occasion of humor, and I would therefore emphasize the importance of avoiding the sin of hypocrisy."

BIBBY, C. Sex Education. *Med. Officer.* 74, 23:187 (Dec. 8), 1945.

### Removing Some of the Mystery

—As in the country, so in the city, poliomyelitis is spread principally by patient to patient contact. In a painstaking study carried out in Chicago last summer, the infection was found to be as contagious for toddlers as are the other diseases of childhood. The researchers unearthed no evidence that insects played a rôle in the spread of the disease.

CASFY, A. E., *et al.* Transmission of poliomyelitis by Patient to Patient Contact (and two related papers). *J.A.M.A.* 129, 17:1141 (Dec. 22), 1945.

### Better Health for Americans—

Though the ideas stem from the cloistered precincts of a medical school, it is refreshing to see in one of our medical journals a dispassionate presentation of these four problems: distribution of treatment facilities, payment for medical services, organization of such services, and economic opportunities for physicians. This is the first paper of what promises to be a rewarding symposium.

CLARK, D. A. Problems of Medical Care. *New England J. Med.* 234, 2:53 (Jan. 10), 1946.

### "This Fight for Health . . ."

Canada's plans for a more effective health service and a system of health insurance are presented in some detail. Canadians seem to be quite prudent people, much like ourselves, yet they go ahead with their prepaid medical care scheme with no evident worry about its undermining their ordained way of life or concern about whether or not it is communistic in origin.

CLAXTON, B. Mapping Our New Frontiers of Health. *Canad. Pub. Health J.* 36, 12: 455 (Dec.), 1945.

### Wild Prediction Department—

What do you suppose would happen if an agency issued a completely honest report, accurate and penetrating as an x-ray, listing failures as well as accomplishments and straddling no controversial issues—even the one of need for the agency's own program? The writer makes this prediction: of course, the executive would be fired, but if the trustees did not burn every copy, the public response would be amazing.

CROSBY, A. L. Toward Better Annual Reports. *Channels.* 23, 3:1 (Dec.), 1945.

**Earmarks of a Crisis**—This brief excerpt tells a long story: "... while the over-all rate of acquisitions of new (venereal) infections by all Navy men has dropped substantially from pre-war levels, the trend for 1945 is up—and drastically so..." What the Navy is doing with the candidates for infection while still in uniform and the parallel civilian plans are things you should know about.

FERREE, J. W., and ENNES, H. The Venereal Disease Heritage of World War II (and) HELLER, J. R. The Postwar Syphilis Control Problem in the United States. *J. Soc. Hyg.* 31, 8:515 (Nov.), 1945.

**Here's a Treat**—The man who had the God-given curiosity to examine a phenomenon which many other bacteriologists must have seen and ignored, tells about his part in the production of the drug that is doing most to change the complexion of public health administration.

FLEMING, A. The Story of Penicillin. *Mod. Med.* 13, 12:57 (Dec.), 1945.

**Complete Health Service**—The Permanente Health Plan proves that medical care can be furnished within the means of the average American, and if it is offered to him that same mythical Mr. A. A. will rush to subscribe for it in advance. The writer says he knows this is so because he and his colleagues have offered the service.

GARFIELD, S. R. The Plan That Kaiser Built. *Survey Graphic.* 34, 12:480 (Dec.), 1945.

**Freezing Kills Them**—How can trichinosis be prevented? Microscopic inspection of carcasses has been tried and found wanting. Cooking city garbage would help but not stop spread to all pigs. The deep freezing of all pork products for human consumption might do the trick. As one in six of us gets an infestation at one time or another it would seem that any likely method should be tried.

GOULD, S. E. An Effective Method for the Control of Trichinosis in the United States. *J.A.M.A.* 129, 18:1251 (Dec. 29), 1945.

**We Need To Know the Normal**—Are low-blood pressure and low hemoglobin chiefly responsible for the fatigue that young women suffer? Many are told so, and treated for these conditions. This study of "normal" girls in Cambridge suggests that these are not the real causes of "that tired feeling."

HARDY, H. L. The Clinical Significance of Data Accumulated in Medical Care of Young Women. *New England J. Med.* 233, 26:811 (Dec. 27), 1945.

**Still Held at Belsen**—Intimate impressions are given about the long-range problems of the Stateless Nazi victims who have no home to go to and wouldn't dare to go there if they had. Pictured too are the hideous hygienic conditions they survived.

HARRISON, E. G. The Last Hundred Thousand. *Survey Graphic.* 34, 12:469 (Dec.), 1945.

**Calculated Crimes**—Here is told how the British medical officers dealt with the terrified horde of liberated D.P.'s who—lousy, diseased, and starved—rushed for the Rhine. The picture of the hygienic conditions from which they escaped will make you sick.

HARVEY, W. C., and MARKOWE, M. The Rhine River Barrier (and) MANN, B. Hygienic Problems in Displaced Persons' Camps in Germany. *Pub. Health.* 59, 3:31 (Dec.), 1945.

**Teeth Are To Chew With**—Blaming dietary deficiencies for modern man's defective teeth has no scientific basis argues this writer. If this were so, present-day diet would have had an adverse effect upon the whole body. Yet we know that civilized men are greatly superior to primitives. No, the teeth are poor because we don't use them, and how to induce us to put them to work is a poser.

KLATSKY, M. Function versus Nutrition as a Controlling Factor in Dental Health: An Anthropologic Survey. *J. Am. Dent. A.*, 32, 21:1416 (Dec.), 1945.

**For Thin and Fair Skins—**Holding that this department might well be put occasionally to some useful purpose, we pass along to you the information that one application of dark red veterinary petrolatum will give complete protection against sunburn for a whole day and water will not wash it from the skin.

LUCKJESH, M., *et al.* Protective Skin Coatings for the Prevention of Sunburn. *J.A.M.A.* 130, 1:1 (Jan. 5), 1946.

**Upgrade, Peak, and Downgrade—**Contagiousness, argue these writers, is not a fixed characteristic of tuberculosis. In a highly tuberculized environment, the disease is not a contagion. In not-yet-tuberculized or de-tuberculized environments, tuberculosis is contagious. The legal implications of this thesis are discussed.

MAYER, E., and RAPPAPORT, I. Is Tubercu-

losis Contagious? Compensation Medicine. 1, 1:5 (Jan.), 1946. (Note the 1:1 please!)

**What an Expectant Health Worker Should Know—**Plenty of jobs are available in public health for those who are adequately trained for them. The meaning of adequate training for the medical graduate constitutes the burden of this paper which also paints an inviting picture of the opportunities and responsibilities.

PARRAN, T. Opportunities for the Medically Trained in Public Health. *J.A.M.A.* 129, 17:1161 (Dec. 22), 1945.

**Little Rhodie Pioneers—**This is mostly about the Rhode Island Sickness Compensation Act and the reasons other states have not followed suit, but it contains a list of bills on compulsory sickness insurance introduced in, and ignored by, the various state legislatures over the past five years.

STUCKE, A. Notes on Compulsory Sickness Insurance Legislation in the States, 1939-44. *Pub. Health Rep.* 60, 52:1551 (Dec. 28), 1945.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed in future issues.*

ANNUAL REPORT OF THE FEDERAL SECURITY AGENCY, Section 4. U. S. Public Health Service. Washington, D. C.: Govt. Ptg. Office, 1945. 156 pp. Price, \$30.

BIRTHS, INFANT MORTALITY, MATERNAL MORTALITY IN 1942. GRAPHIC PRESENTATION. Washington, D. C.: Dept. of Labor, Children's Bureau, 1945. 17 pp.

A BLIND HOG'S ACORNS. VIGNETTES OF THE MALADIES OF WORKERS. By Carey P. McCord, M.D. Chicago: Cloud, Inc., 1945. 311 pp.

CLINICAL ELECTROCARDIOGRAPHY. By David Scherf, M.D., and Linn J. Boyd, M.D. 2d ed. Philadelphia: Lippincott, 1946. 267 pp. 243 illus. Price, \$8.00.

THE COMMONWEALTH FUND. TWENTY-SEVENTH ANNUAL REPORT OF THE GENERAL DIRECTOR FOR THE YEAR ENDING SEPTEMBER 30, 1945. New York: Commonwealth Fund, 1946. 59 pp.

DEFINITIONS OF TERMS AND INSTRUCTIONS FOR REPORTING MONTHLY STATISTICS OF FAMILY CASEWORK. By the Department of

- Statistics of the Russell Sage Foundation. New York: Russell Sage Foundation, 1946. 26 pp. Price, \$.20.
- THE EXPERIMENTAL HEALTH PROGRAM OF THE UNITED STATES DEPARTMENT OF AGRICULTURE. A Study Made for the Subcommittee on Wartime Health and Education of the Committee on Education and Labor, United States Senate. Washington, D. C.: Govt. Ptg. Office, 1946. 166 pp.
- HEALTH GUIDES AND GUARDS. By Francis P. Wall and Louis D. Zeidberg, M.D. 3d ed. New York: Prentice-Hall, 1946. 392 pp. Price, \$2.75.
- HEALTH NEEDS OF SCHOOL-AGE CHILDREN AND RECOMMENDATIONS FOR IMPLEMENTATION. Reprint from "School Life," November, 1945. Washington, D. C.: Govt. Ptg. Office, 1945. 8 pp.
- HOUSING POLICY. Housing standards, the organization and financing of low-cost housing and the relation of house building to the general level of employment. Montreal: International Labour Office, 1945. 28 pp. Price, \$.25.
- JOBS AND THE MAN. A Guide for Employers, Supervisors, Interviewers, Counselors, Foremen, and Shop Stewards in Understanding and Dealing with Workers—Veterans or Civilians. By Luther E. Woodward, Ph.D., and Thomas A. C. Rennie, M.D. Springfield, Ill.: Thomas, 1945. 132 pp. Price, \$2.00.
- LAW OF MARRIAGE AND DIVORCE SIMPLIFIED. By Richard V. Mackay, LL.B., LL.M. New York: Oceana Publications, 1946. 74 pp. Price, \$1.00.
- MAKING HEALTH VISIBLE. Cleveland: Cleveland Health Museum, 1945. 32 pp. Price, \$.25.
- A MANUAL OF PHYSICAL THERAPY. By Richard Kovacs, M.D. 3d ed. Philadelphia: Lea & Febiger, 1944. 309 pp. 118 illus. Price, \$3.25.
- A MEDICAL STUDY OF THE EFFECT OF TNT ON WORKERS IN A BOMB AND SHELL LOADING PLANT AND REPORT OF FATAL CASE OF APLASTIC ANEMIA. U. S. Public Health Service, Public Health Bulletin No. 291. Washington, D. C.: Govt. Ptg. Office, 1945. 98 pp. Price, \$.25.
- THE MILK INDUSTRY. A Comprehensive Survey of Production, Distribution and Economic Importance. By Roland W. Bartlett, Ph.D. New York: Ronald Press, 1946. 282 pp. Price, \$4.50.
- 1943-1944 REPORT OF THE NEW YORK STATE COMMISSION TO FORMULATE A LONG RANGE HEALTH PROGRAM. Legislative Document (1944) No. 56A. Albany: Williams Press, 1945. 213 pp.
- NUTRITION AND CHEMICAL GROWTH IN CHILDHOOD. Volume II. Original Data. By Icie G. Macy, Ph.D., Sc.D. Springfield, Ill.: Thomas, 1946. 1027 pp. Price, \$10.00.
- PROTOZOOLOGY. By Richard R. Kudo, D.Sc. 3rd ed. Springfield, Ill.: Thomas, 1946. 778 pp. 336 illus. Price, \$8.00.
- PUBLIC HEALTH AND THE AMERICAN WAY. By H. B. Anderson. New York: Citizens Medical Reference Bureau, Inc., 1945. 238 pp. Price, \$2.50.
- THE SOCIAL PROBLEMS OF AN INDUSTRIAL CIVILIZATION. By Elton Mayo. Boston: Harvard Business School, 1945. 150 pp. Price, \$2.50.
- A STUDY OF NURSING SCHOOL HEALTH PRACTICES AND A RECOMMENDED HEALTH PROGRAM FOR STUDENT NURSES. By Burnet M. Davis, Robert H. Felix, Charlotte Silverman and Marion E. Altenderfer. Supplement No. 189 to the Public Health Reports. Washington, D. C.: Govt. Ptg. Office, 1945. 22 pp. Price, \$.10.
- TUBERCULOSIS INDUSTRIAL NURSING AND MASS RADIOGRAPHY. Prepared by Julie E. Miale, R.N. New York: National Tuberculosis Assn., 1945. 67 pp.
- TUBERCULOSIS HOSPITAL. 200 Bed Capacity. American Trudeau Society. New York: National Tuberculosis Assn., 1945. 10 pp.
- TUBERCULOSIS MORTALITY IN MAJOR CITIES, UNITED STATES, 1942-43. Vital Statistics—Special Reports. National Summaries. Washington, D. C.: Department of Commerce, Bureau of the Census, 1945. Vol. 21, No. 14. 44 pp.
- VD MANUAL FOR TEACHERS. By Samuel D. Allison, M.D., and June Johnson, M.S. New York: Emerson Books, 1946. 149 pp. Price, \$2.00.
- WHAT NEXT FOR NEW YORK'S JOADS? New York: Consumers League of New York, 1946. 32 pp. Price, \$.25.
- WHITE VERSUS BROWN FLOUR. By F. L. Dunlap, Sc.D. Newark: Wallace & Tiernan, 1945. 272 pp.



## ASSOCIATION NEWS

### SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 11

#### RESOLUTION ENDORSING CONTROLLED ANIMAL EXPERIMENTATION

Adopted by the Executive Board of the American Public Health Association  
January 25, 1946

The public health professions have noted current legislative efforts to prohibit the use of animals for scientific medical research.

The American Public Health Association, representing those who are intimately engaged especially in the application of medical science, strongly endorses the continued use of controlled animal experimentation. Such unhampered experiments we know to be essential for continued medical progress.

The public should be fully aware of the consequences which would follow the enactment of any legislation forbidding the use of dogs or other animals for experimental purposes under responsible direction, such as that in the universities and medical schools. It is common public knowledge that a large part of the recent advances in protect-

ing the health of children grows out of the use of dogs for experimental purposes.

We know that the surgeon's skill goes back to operations which he has repeatedly made as a student under supervision in the medical school.

Is it desirable, for instance, that new drugs or new surgical technics should be tried first on babies or on dogs?

It is inconceivable in this day when the benefits of science are so manifest that the people will wish to shackle the hands of those whose chief concern is the lengthening of life and the prevention of disease.

We call upon all intelligent citizens who have the public interest at heart to oppose openly any attempts to restrict the essential freedom of scientific research.

#### DR. ROSCOE P. KANDLE APPOINTED ASSOCIATE FIELD DIRECTOR

The Executive Board of the American Public Health Association has announced the appointment of Roscoe P. Kandle, M.D., M.P.H., Fellow, A.P.H.A., as Associate Field Director on the staff of the Committee on Ad-

ministrative Practice. Dr. Kandle began his field assignment in January, working first on the survey of the Colorado State health services with Carl E. Buck, Dr.P.H., Field Director.

Dr. Kandle graduated from Jefferson Medical College, Philadelphia, in 1934 and from the Johns Hopkins School of

Hygiene and Public Health in 1938. He served for four years on the staff of the New Mexico State Department of Health, for a short time with the New Jersey State Department of Health, and since 1940 has been identified with public health administration in Louisiana, most recently as the Director of the Division of Local Health Services.

Dr. Kandle's responsibilities will be similar to those carried for several years past by George T. Palmer, Dr.P.H., now Senior Sanitarian (R), U. S. Public Health Service, Washington, D. C. His special assignment will be in connection with state health studies and the use of the Evaluation Schedule by state and local departments of health and in the periodic publication by the Committee on Administrative Practice of *Health Practice Indices*.



*Roscoe P. Kandle*

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

Lt. C. Dale Barrett, Jr., M.C., WDPC, A-3, Fort Devens, Mass., Director, Ottawa County Health Dept., Grand Haven, Mich. (upon release from service)  
Wayne G. Brandstadt, M.D., Johns Hopkins Univ., School of Public Health, Baltimore 5, Md., Student  
Sheldon M. Caplan, M.D., 208 E. 21 St., Chester, Pa., Senior Asst. Surgeon (R), U. S. Public Health Service  
Andrew H. Dibble, M.D., Central Louisville Health Center, 1125 Cedar Court, Louisville, Ky., Director  
Malcolm J. Ford, M.D., Johns Hopkins Univ., School of Public Health, Baltimore 5, Md., Senior Asst. Surgeon, U S Public Health Service  
James P. Jones, M.D., Ritchie County Health Dept., Pennsboro, W. Va., Health Officer  
Robert H. Lowe, M.D., 24 W. 69 St., Apt. 6B, New York 23, N. Y., Student in Hospital Administration, Columbia Univ. School of Public Health  
Charles W. Mangun, Jr., M.D., State Board

of Health, Bureau of Tuberculosis, Jacksonville, Fla., Acting Director  
Alfred Mordecai, M.D., 806 S. Hawthorne Rd., Winston-Salem, N. C., District Health Officer, Davie-Stokes-Yadkin District Health Dept.  
Edward C. Mulliniks, M.D., Sullivan County Health Dept., Blountville, Tenn., Director  
Harry W. Weest, Jr., M.D., South Office Bldg., Room 510, Harrisburg, Pa., State Secretary of Health, State Health Dept.

### *Laboratory Section*

J Stewart Bell, M.D., D.P.H., 124 Pinewood Ave., Toronto, Ont., Can., Student, School of Hygiene, Univ. of Toronto  
Theodore F. Dozois, Ph.D., 1392 University Ave., Berkeley 2, Calif., Research Assoc., Virus Research Lab., State Dept. of Health  
Beauford A. Kennedy, 2915 Macey St., Jackson, Miss., Bacteriologist, State Hygienic Lab.  
Lt. Max Loewe, Sn C., Northington General Hospital, No. 227, Tuscaloosa, Ala., Bacteriologist

Carroll Lowe, 724 Peeau Blvd., Jackson 40, Miss., Senior Microbiologist, Parasitology Dept., Div. of Labs., State Board of Health  
 Anthony B. Manera, 654 Mt. Pleasant Ave., Providence 8, R. I., Inspector of Dairies, Providence Health Dept.

Harold C. Maynard, 2912 Migel Pl., New York 61, N. Y., Lab. Asst., New York City Dept. of Health

S. Milton Rabson, M.D., 730 W. Berry St., Fort Wayne 2, Ind., Lab. Director, St. Joseph Hospital

Mary Alla Monroe, 704 N. President, Jackson, Miss., Microbiologist, Div. of Labs., State Board of Health

Kenneth W. Riley 618 Walnut St., Grand Forks, N. D., City Chemist, Grand Forks Water and Sewage Dept.

Emile A. Rizk, M.D., P. O. Box 349, Beirut, Lebanon, Syria, Director, Antirabic Institute, French School of Medicine

Dr. Ramon C. Ruiz-Nazario, P. O. Box 2822, San Juan 12, P. R., Director of Lab., University Hospital

Leslie S. Sharpe, 1339 Pacific St., Brooklyn 16, N. Y., Bacteriological Lab., Asst., Dept. of Health

Carlos Sole-Vernin, M.D., Sao Francisco Xavier, 694, Rio de Janeiro, Brazil, S. A., Lab. Asst., Service Especial de Saude Publica

Helen E. Walsh, Box 222, Anchorage, Alaska, Senior Bacteriologist, Territorial Dept. of Health

#### *Vital Statistics Section*

John E. Blak, 1219 Security Trust Bldg., Indianapolis 4, Ind., Director, Public Relations & Statistical Service, Indiana Tuberculosis Assn.

Martha C. Eaton, 2605 Haste St., Berkeley 4, Calif., Medical Statistician, Permanente Foundation Hospital

#### *Engineering Section*

Robert R. Ackley, 15 Exchange Pl., Jersey City, N. J., Director, Industrial Div., Onyx Oil & Chemical Co.

Pastor S. Echavez, 1482 Economia St., Manila, Philippine Islands, Sanitary Engineer and Acting Chief, Section of Sanitary Engineering, Bureau of Health

John C. Flake, Ph.D., State Board of Health, Civil Courts Bldg., New Orleans 7, La., Acting Director, Div. of Milk and Dairy Products

Gerald A. Fleet, M.C.E., 112 E. 19 St., New York 3, N. Y., Engineer, Buck, Seifert and Jost (Consulting Engineers)

Clarence E. Gabriel, 3228 E. 4 St., Tulsa, Okla., Sanitary Inspector, City Health Dept.

Molian Issardas Gurbaxani, 615 N. Wolfe St., Baltimore, Md., Student, Johns Hopkins School of Hygiene and Public Health

Frank E. Haight, 7806 Jeannette St., New Orleans, La., Engineering Aide, State Board of Health

Horace G. Hesse, Fayetteville, W. Va., Sanitarian, Fayette County Health Dept.

Chung-yuan Li, 107 Cook St., Ithaca, N. Y., Student, Cornell Univ.

Adolphus L. Lively, Box 20, Bluefield, W. Va., Sanitarian, Div. of Sanitary Engineering, State Health Dept.

Linden J. Murphy, M.S., McCormick Bldg., Room 755, 332 S. Michigan, Chicago 4, Ill., Senior Sanitary Engineer, U. S. Public Health Service

#### *Industrial Hygiene Section*

Edward R. Aston, D.D.S., 214 Commonwealth Bldg., Harrisburg, Pa., Dental Consultant, State Dept. of Health

Francis C. Black, 915 Clinton Ave., Oak Park, Ill., Engineer-Supervisor, Hartford Accident & Indemnity Co.

Gladys A. Jahneke, 633 North 12, Seattle 2, Wash., Industrial Advisory Public Health Nurse, State Dept. of Health

#### *Food and Nutrition Section*

Roland Canirand, M.Sc., Dept. of Agriculture, Quebec, Can., General Inspector of Dairy Products

Clifford F. Evers, 20 Beech Terr., Millburn, N. J., Director of Research, General Foods Corp.

Bernes Larson, 507 Carondelet St., New Orleans, La., Consultant on Nutrition, City Health Dept.

E. M. Yvonne Love, Provincial Board of Health, Parliament Bldgs., Victoria, B. C., Can., Consultant in Nutrition

John F. McNamara, 909 S.E. Miami Rd., Miami, Fla., Sanitarian, Dade County Health Dept.

Everett W. Wooster, City Hall, Salina, Kan., Director, Food and Sanitation and Milk Inspection, City Health Dept.

#### *Maternal and Child Health Section*

Edward M. Ditolla, M.D., 445 W. 23 St., New York 11, N. Y., Supervisor, Child Hygiene, New York City Dept. of Health

Paul V. Lemkau, M.D., 615 N. Wolfe St., Baltimore 5, Md., Assoc. Prof. of Mental Hygiene, School of Hygiene and Public Health, Johns Hopkins Univ.

Elk Tannenbaum, M.D., 168 W. 86 St., New York 24, N. Y., Supervising Physician, New York City Dept. of Health

Kent A. Zimmerman, M.D., Children's

Bunreau, Dept. of Labor, Washington 25,  
D. C., Director, Mental Health Unit

#### *Public Health Education Section*

Mabel I. T. Abbott, M.S.P.H., R.N., 129 East  
St., County Health Dept., Wadsworth, O.,  
County Public Health Nurse

William W. Bolton, M.D., 535 N. Dearborn  
St., Chicago 10, Ill., Asst. Director, Bureau  
of Health Education, American Medical  
Assn.

J. F. Marvin, Buechel, M.Sc., Everett Junior  
College, Everett, Wash., Dean

Mercedes Cedo, M.S.P.H., 21 Munoz Rivera,  
Mayaguez, P. R., Senior Health Educator,  
Public Health Unit

Grace E. Dorsey, M.A., 2238 5 Ave., New  
York, N. Y., Health Education Secy., N. Y.  
Tuberculosis and Health Assn.

Alice L. Fajans, Grand Central Ave., Box  
197, Amityville, N. Y., Exec. Secy., Suffolk  
County Cancer Committee

Mary Fitzgerald, 326 Appleton St., Holyoke,  
Mass., Exec. Secy., Holyoke Tuberculosis  
Assn.

Frances Kornegay, M.S.P.H., 413 Breazeale  
Ave., Mt. Olive, N. C., School Health Co-  
ordinator, Wayne County Health Dept.

Louis E. Kulcinski, Ph.D., 927 Lantana Dr.,  
Kinsville, Tex., Head, Health & Physical  
Education, Texas College of Arts and  
Industry

Margaret L. Leonard, Ed.D., U. S. Public  
Health Service, Washington, D. C., Health  
Education Consultant

Catalina Lube, M.P.H., Dept. of Health, Office  
of Health Education, San Juan, P. R.,  
Health Education Supervisor

Virginia L. Potts, M.S.P.H., 301 S. Union,  
Concord, N. C., Health Educator, Cabarrus  
County Health Dept.

Morton A. Seidenfeld, Ph.D., 120 Broadway,  
N.F.I.P., New York 20, N. Y., Director  
of Psychological Services, National Founda-  
tion for Infantile Paralysis

Robert C. Thomas, D.O., Box 210, Verdin,  
N. M.

Marjorie A. C. Young, M.Ed., 310 Cedar St.,  
Yale School of Public Health, New Haven.  
Conn., Student

#### *Public Health Nursing Section*

Jeanie L. Adkerson, 2019 Eye St., N.W., Apt.  
803, Washington 6, D. C., Consultant in  
Disaster Nursing, American Red Cross,  
Eastern Area

Lucille C. Becker, 3792a Lee Ave., St. Louis 7,  
Mo., Public Health Nursing Consultant.  
Missouri Rheumatic Fever Program. State  
Service for Crippled Children

Wilda Camery, M.A., 10 Mitchell Pl., New  
York 17, N. Y., Supervisor of District  
Office, Community Service Society

Mary R. Cook, R.N., Selby, S. D., County  
Public Health Nurse, State Board of Health  
Elizabeth Earle, M.S., 1800 N. Edison St.,  
Arlington, Va., Director, Bureau of Nursing,  
Arlington County Health Dept.

Gertrude Gardiner, 234 Rosedale Dr., El Paso,  
Tex., Exec. Secy., El Paso Tuberculosis  
Assn.

Mabel V. Hawkins, R.N., 407 W. Franklin  
St., Baltimore 1, Md., Visiting Nurse,  
Mutual Benefit Society

Julia Hereford, M.A., Mary Kirkland Hall,  
Nashville, Tenn., Teacher, School of Nurs-  
ing, Vanderbilt Univ.

Edith S. Kivett, 74 Godwin Ave., Ridgewood,  
N. J., Supervisor, Red Cross Nursing  
Service

Aileen L. Losey, R.N., 234 Martine Ave.,  
White Plains, N. Y., Supervising Public  
Health Nurse, Westchester County Dept. of  
Health

Lillian K. Meade, M.A., 69 Main St., Tucka-  
hoe 7, N. Y., Director, Public Health Nurs-  
ing Organization of Eastchester, Inc.

Eleanore C. Moomau, Petersburg W. Va.,  
Grant County Public Health Nurse

Helen M. Murphy, 1301 Ninth Ave., Helena,  
Mont., Supervisor, Public Health Nursing,  
State Board of Health

Elizabeth P. Olson, R.N., 395½ S. Floral  
Ave., Bartow, Fla., Supervisor of Nurses,  
Polk County Health Dept.

Loretta C. Parsons, R.N., City Health Dept.,  
Portsmouth, Va., Asst. Nurse Officer, U. S.  
Public Health Service

Erma M. Rawson, R.N., 1970 Windsor St.,  
Salt Lake City, Utah, Nursing Supervisor,  
Salt Lake County Board of Health

M. Grace Ross, R.N., 60 Eighth St., New  
Bedford, Mass., Director, Instructive Nurs-  
ing Assn.

Elizabeth K. Scofield, Barry County Health  
Dept., Hastings, Mich., Staff Nurse

Myrtle Sorenson, 7367 N. Ashland Blvd.,  
Chicago 26, Ill., Public Health Nursing  
Supervisor, Cook County Health Dept.

Jean E. Sutherland, M.A., 37-06 81 St., Jack-  
son Heights, N. Y., Consultant, Nurse  
Counseling and Placement Office, U. S.  
Employment Service

Frances E. Taylor, 2119 Huidekoper Place,  
N.W., Washington 7, D. C., Public Health  
Nursing Consultant, Employees' Health  
Service, U. S. Public Health Service

Olivia J. Todd, R.N., 729 Irma St., Orlando,  
Fla., Supervising Nurse, Orange County  
Health Dept.

*Epidemiology Section*

- Hilario Lara, Dr.P.H., 66 Mabolo St., Pasay, Rizal, Philippines. Director and Prof. of Epidemiology, Institute of Hygiene
- Joseph A. Moore, M.D., Univ. of Mich. School of Public Health, Ann Arbor, Mich., Student
- Don M. Rees, Ph.D., University of Utah, Biology Dept., Salt Lake City, Utah, Prof. of Zoology and Entomology
- Clayton M. Steward, M.D., 46 Elm St., Glens Falls, N. Y., Apprentice Epidemiologist, State Dept. of Health
- John M. Weir, M.D., 49 W. 49 St., New York 20, N. Y., Field Staff, International Health Div., Rockefeller Foundation

*School Health Section*

- Rosallia Kurz, M.A., 2174 Strathmoor Blvd., Louisville, Ky., Asst. Supervisor of Health and Physical Education, Louisville Public Schools
- Helen Manley, M.A., 6701 Delmar, University City, Mo., Director, Health and Physical Education, University City Schools
- Esther C. Potts, 2023 Fifth Ave., San Rafael, Calif., School Nurse, Marin County Board of Education
- Ethel E. Tobin, 301 Hall of Records, Fresno 1, Calif., Health Coördinator, Fresno County Schools

*Dental Health Section*

- Cyril L. Friend, D.D.S., M.P.H., State Board

of Health, Jefferson City, Mo., Senior Public Health Dentist

*Unaffiliated*

- Burnet M. Davis, M.D., 790 Clemont Drive, N. E., Atlanta, Ga., Surgeon, U.S.P.H.S., assigned to Labor Branch, USDA, as Field Medical Officer, Southeastern Division
- Frederick Fink, M.D., Franklin Life Insurance Co., Springfield, Ill., Medical Director
- Sister Teresa Kelly, Sisters of Charity, Carville, La., Chief Nurse, U. S. Marine Hospital

## DECEASED MEMBERS

- Robert C. Farrier, M.D., East St. Louis, Ill., Elected Member 1929, Elected Fellow 1942, Health Officers Section
- John Grill, M.D., Milwaukee, Wis., Elected Member 1935, Laboratory Section
- Don W. Gudakunst, M.D., Dr.P.H., Westport, Conn., Elected Member 1921, Elected Fellow 1927, Maternal and Child Health Section
- Sumner M. Miller, M.D., Peoria, Ill., Elected Member 1935, Elected Fellow 1942, Health Officers Section
- Arthur L. Murray, M.D., Washington, D. C., Elected Member 1920, Unaffiliated
- Mazýck P. Ravenel, M.D., Columbia, Mo., Elected Member 1897, Charter Fellow, Laboratory Section

## NEW A.P.H.A. ACTIVITIES IN MEDICAL CARE

Implementing "Medical Care in a National Health Program," an Official Statement of the American Public Health Association adopted in October, 1944, the Committee on Administrative Practice announces the expansion of its Subcommittee on Medical Care and new plans for continuation of this important program.

A grant from the Rockefeller Foundation now makes possible the employment of a much needed full-time staff for the work of this committee. Howard M. Kline, Ph.D., of the Procurement and Assignment Service, Federal Security Agency, and the staff of the U. S. Public Health Service, has accepted the position of Technical Secre-

tary, and other staff persons are being assembled to carry on a project which has four major aims:

a. To formulate in considerable detail the specifications of a suitable medical care program, and to set forth with definitiveness the successive steps by which such a program should be brought into being, and further to formulate detailed proposals for the organization, financing, and administration of a program;

b. concurrent with (a) to evaluate the experience of existing medical care programs, thus laying the basis of factual knowledge necessary for solution of the problem;

c. To review proposed federal and state health legislation in the light of declared principles and to recommend

to the Association a stand with respect to such legislation;

d. To aid in informing public health personnel as to medical care problems and to stimulate the assumption of leadership in the formulation and administration of medical care programs.

For the purposes of this expanded program, the Subcommittee on Medical Care has been enlarged. Its membership now includes:

Joseph W. Mountin, M.D., *Chairman*  
Chief, States Relation Division  
U. S. Public Health Service

Dean A. Clark, M.D.  
Medical Director  
Health Insurance Plan of Greater New York

Edwin F. Daily, M.D.  
Director, Division of Health Services  
U. S. Children's Bureau

Isidore S. Falk, Ph.D.  
Director, Bureau of Research and Statistics  
Social Security Board

Vlado A. Getting, M.D.  
Massachusetts State Commissioner of Public Health

J. Roy Hege, M.D.

Director, Division of Local Health Administration

North Carolina State Board of Health

Basil MacLean, M.D.

Superintendent, Strong Memorial Hospital,  
Rochester, N. Y.

Hugh Morgan, M.D.

Professor of Medicine

Vanderbilt University School of Medicine

George St. John Perrott

Chief, Division of Public Health Methods  
U. S. Public Health Service

Marian G. Randall, R.N.

Executive Director

Visiting Nurse Service of New York

Dean Roberts, M.D.

Chief, Bureau of Child Hygiene

Maryland State Health Department

Edward S. Rogers, M.D.

Assistant Commissioner

New York State Department of Health

Nathan Sinai, Dr.P.H.

Professor of Public Health

University of Michigan

R. M. Walls, D.D.S.

Dental Practice, Bethlehem, Pa.

John B. Grant, M.D., Consultant

Rockefeller Foundation

Hugh R. Leavell, M.D., Consultant

Rockefeller Foundation

## EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing Officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

### Vacant Positions Listed with the Association's Vocational Counseling and Placement Service

As this issue of the Journal went to press, the Vocational Counseling and Placement Service of the American Public Health Association, 1790 Broadway, New York City, had listed 96 positions for physicians in public health in administration, epidemiology and in the clinical field. Nine positions were offered to non-medical administrators, 2 to public health dentists, 27 to health educators, 10 to laboratory workers, 12 to sanitary engineers, 1 to an industrial engineer, 12 to sanitarians, 4 to statisticians, 1 for a nutritionist and 5 for medical social workers. A total of 180 positions offered by 86 employers were currently listed. One hundred and twenty-five applicants in all categories were in the record. This represents a substantial increase from the figures of one month previous. Only a part of these openings are covered in listings on the employment page of the *American Journal of Public Health*. Employers and candidates interested should communicate with the Vocational Counseling and Placement Service at the above address.

As previously announced, this service is rendered without charge by the Association, which is assisted for this purpose by the U. S. Public Health Service in a jointly sponsored project carried on under the auspices of the Committee on Professional Education, of which William P. Shepard, M.D., of San Francisco, is Chairman. It is the aim of this service to place at the disposal of all persons now seeking positions in public health the counsel of those well informed in the field, with a special effort to assist veterans. Public health nursing positions are not listed by the A.P.H.A. but inquiries are forwarded to the N.O.P.H.N. and other nurse placement agencies.

### POSITIONS AVAILABLE

(Supplemental to list in February Journal)

**Wanted:** Physician trained in tuberculosis to assume permanent control of Tuberculosis Division of Health Department of Eastern city of 185,000. Applicant please state salary expected. Apply Box H, A.P.H.A.

**Wanted:** In City of Hartford, Conn., physician trained in venereal diseases to assume permanent administrative control of Venereal Diseases Division of the Health Department. Applicant please state salary expected. Apply Dept. of Health, Hartford, Conn.

**Wanted:** Executive Secretary for Hawaii Territorial Society for Mental Hygiene. New position. Salary \$350 month, advancement dependent on growth of Society and its work. Duties to guide, stimulate, and promote development of integrated program for the So-

ciety, now 3 years old. Major activities, education, coordination, publicity. Requirements, training and experience in psychiatric social work with demonstrated ability in public relations preferred. Will also consider candidates with training and successful experience in community organization. Selection to be made on basis of unassembled examination, including submission of short thesis on pertinent subject. For particulars write to the Society, clipper mail, attention Miss Vivian Johnson, Mabel Smythe Bldg., Honolulu, T. H.

**Physical Therapy Technician** for New Hampshire Department of Public Health. Apply to Merit System Council, State House, Concord, N. H.

**Wanted:** Director, State-wide Hospital Survey. Survey of hospital facilities

ties in Maryland planned under special committee of State Planning Commission. Applicant must have experience in hospital administration and community organization. Salary \$5,000 plus travel expense. Apply J. D. Colman, Director, Associated Hospital Service of Baltimore, Inc., 506 Park Ave., Baltimore 1, Md.

**Wanted:** Medical Director. New prepayment medical care program under joint sponsorship of State Medical Society and Blue Cross needs full-time medical director. Starting salary \$6,000 per annum. Apply J. D. Colman, Director, Associated Hospital Service of Baltimore, Inc., 506 Park Ave., Baltimore 1, Md.

Tennessee Department of Public Health announces vacancies for public health officers, sanitary engineers, chemical engineers in stream pollution control and industrial hygiene work, and for public health nurses. Salary dependent on training and experience. Apply State Department of Health, Nashville 3, Tenn.

**Commercial opening for health man.** Large specialty manufacturing organization with nation-wide sales force and a number of public relations men who call on health officers. If you have public health background and feel you might like to get into commercial life this opportunity may appeal. Ability to deal with people important. Also ability to write and speak before P.T.A. groups, etc. Travel necessary. Write fully in confidence giving complete background, education, compensation. Box L, Employment Service, A.P.H.A.

**Industrial Hygiene Engineer** position available with Oregon State Board of Health, Portland, Ore. \$300-\$375 per month. Requires B.A. in Chemical Engineering, 2 years as industrial hygiene engineer in government agency, 1 year graduate work in chemical engineering or industrial hygiene (2 years' engineering experience may be substituted for 1 year graduate work). Unassembled examination. Write Merit System Council, 616 Mead Bldg., Portland 4, Ore.

**Wanted:** Public Health Nurses for generalized nursing program. Salary range \$210 to \$240 per month. Under Civil Service, 40 hour week, vacation and sick leave privileges. Address Director of Public Health Nursing, City of Seattle, 504 County City Bldg., Seattle 4, Wash.

**Wanted:** Full-time dentist interested and qualified in preventive, public health, and children's dentistry. Position established by Marin Co. Health Dept. Salary \$4,800 plus travel expense. Dental trailer with complete equipment furnished. Pub-

lic health experience and training desirable. Must be licensed in California. Apply Irving D. Johnson, M.D., Marin Co. Health Officer, 704 4th St., San Rafael, Calif., stating personal data, educational background and experience.

**Wanted:** Executive Director for public health generalized service, with college degree and experience in public health nursing. Agency is in suburban Philadelphia. Box P, Employment Service, A.P.H.A.

**Wanted:** Physician qualified to assume position as Director of Maternal and Child Health and Crippled Children Division. Minimum requirements include public health training and experience and training in pediatrics. Salary \$325 to \$350. Under Merit System. Address State Board of Health, Capitol Building, Cheyenne, Wyoming.

**Wanted:** Physician qualified to assume position as Director of Division of Communicable Disease Control. Special attention given to tuberculosis. Salary \$325 to \$350. Under Merit System. Address State Board of Health, Capitol Building, Cheyenne, Wyoming.

**Research Fellowship in Sanitary Engineering** available to graduate engineer with special training in chemistry and bacteriology. \$1,000 per annum with two-thirds residence time credited toward M.S. degree. Address, Director, Engineering and Industrial Experiment Station, University of Florida, Gainesville, Fla.

**Wanted:** Qualified public health physicians and public health nurses in Texas. Applicants should have specialized training or experience in public health work. George W. Cox, M.D., State Health Officer, Austin, Texas.

**Bacteriologist** wanted for technical service and field development work in food industries and related fields. Should have B.S. in bacteriology and minor in chemistry or biochemistry. Age 26-32. Location Middle West. Write fully. Box D, Employment Service, A.P.H.A.

**Wanted:** Health Educator. Entrance salary \$3,758, top salary \$4,298 per annum; Epidemiologist and Registrar of Vital Statistics, M.D., with experience in epidemiology, entrance salary \$4,500, top salary \$5,000 plus, per annum; Staff Physician for health districts, qualification M.D., entrance salary \$3,158, top salary \$3,879 per annum. Apply Commissioner of Health, City Hall, Cincinnati 2, Ohio.

**Physician Wanted:** Man or woman



with general clinical experience and public health background for Alaska Marine Health Unit. Services include TB case finding, x-rays, physical examinations, immunizations, well baby conferences, pre- and post-natal examinations, VD control and allied public health procedures. Vessel is 115', well appointed, comfortable, accommodating physician, nurse, laboratory technician, secretary, dental hygienist and crew. Position offers opportunity for travel and service

to communities along Alaska's scenic coastline. Communicate with Territorial Dept. of Health, Box 1931, Juneau, Alaska.

**Wanted:** Registered Nurses, college degree, public health certificate. Five day week, travel position, \$220 per month full maintenance in field. Apply American National Red Cross Pacific Area, Nursing Service, Civic Auditorium, San Francisco, Calif.

### Announcement of Scholarships in Nutrition

Four scholarships available, through North Carolina State Board of Health, at University of Tennessee, Knoxville, for year 1946. Applicants can enter in March or June. Scholarships will provide stipend of \$100 a month for 12 months plus tuition fees and travel while in training. Training period will be for 12 months and will include 9 months' formal training and 3 months' supervised field work. Eligibility requirements: (a) Age between 23 and 35 years; (b) Bachelor's degree in foods and nutrition, chemistry or biological sciences from a recognized institution; (c) teaching, hospital dietetics, nutrition research or other related subjects for a period of at least 2 years. Upon successful completion of training at University of Tennessee, candidates will be employed as nutritionists by North Carolina State Board of Health. Salary scale for nutritionists is \$1,800 to \$3,000 with additional travel allowance of \$1,200 a year. Interested applicants should send transcript of their college record and statement of experience since graduation to Director of Nutrition Division, State Board of Health, Raleigh, N. C.

### New Mexico Merit System Council Announces Unassembled Examinations for:

Director of Maternal and Child Health.....	\$400-\$500
Tuberculosis Control Officer.....	375- 475
Veneral Disease Clinician.....	300- 400
Director of Public Health Nursing.....	275- 325
Maternal Child Health Consultant Nurse.....	225- 275
Public Health Nursing Consultant.....	215- 265
Public Health Nurse-Midwife Consultant.....	215- 265
Public Health Nurse Supervisor.....	200- 250
Public Health Nurse Midwife.....	200- 250
Public Health Nurse.....	175- 215
Staff Nurse.....	145- 165
Emergency War Nurse.....	150- 170
Clinic Graduate Nurse.....	135- 155

State residence not required for appointment. Closing date for filing applications March 23, 1946. Application forms and full information may be obtained from Merit System Council, Post Office Box 939, Santa Fe, N. M.

### Announcement of Examination for Appointment of Sanitary Engineers to the United States Public Health Service

An examination for appointment as Assistant Sanitary Engineer and Senior Assistant Sanitary Engineer in the Regular Commissioned Corps of the United States Public Health Service is scheduled to be held at

Washington, D. C.—USPHS Dispensary, Fourth and D Streets, S.W.....	April 15
New York New York—Stapleton, Staten Island—Marine Hospital.....	June 3
Cincinnati, Ohio—USPHS Water & Sanitation Investigation Station, East Third and Kilgour Streets.....	April 17
Atlanta, Georgia—Malaria Control in War Areas, 605 Volunteer Bldg.....	April 19
New Orleans, Louisiana—Marine Hospital, 210 State Street.....	May 15
Los Angeles, California—USPHS Relief Station, 406 Federal Bldg.....	May 17
San Francisco, California—Marine Hospital, 14th Ave. and Park Blvd.....	May 21
Seattle, Washington—Marine Hospital, Judkins St and 14th Ave. South..	May 23
Denver, Colorado—USPHS District Office, 617 Colorado Building.....	May 27
Chicago, Illinois—Marine Hospital, 4141 Clarendon Avenue.....	May 29
	May 31

The oral professional, academic, and physical examinations will be held at 9 A.M. at places and dates given above. The final written portion of the examination will be given simultaneously at the above locations beginning on June 5, 1946, and ending on June 7, 1946. The written portion of the examination may be given at certain other stations of the Service where two or more regular commissioned officers are on duty, if request is made by an applicant. Minimum age—21.

**Education and Training:** (1) Assistant, at least 7 years of educational (exclusive of high school) and professional training or experience and a degree in engineering (sanitary engineering course); (2) Senior Assistant, as above plus 4 additional years of post-graduate professional training or experience.

**Compensation** (including allowance for quarters and subsistence): (1) Assistant, \$3,411.00 with, and \$2,975.50 without dependents; (2) Senior Assistant \$3,991.00 with, and \$3,555.50 without dependents.

Applicants should address a letter to the Surgeon General, U. S. Public Health Service, Washington, D. C.; at the earliest practicable date, requesting application blanks. Such letter should include a brief biographical statement relative to professional school or college attended, type of studies pursued, degrees granted and subsequent training or experience. Applicants of foreign birth must furnish proof of United States citizenship.

Transportation expenses to and from and cost of maintenance at place of examination must be assumed by the candidate.

### POSITIONS WANTED

**Bacteriologist**, woman, B.S. 1941, 4½ years' laboratory experience, hospital and public health, seeks position in or near New York City. Prefer desk position such as technical literature research, abstracting, etc. Also interested in laboratory work. L-481

**Bacteriologist:** M.A., Johns Hopkins, seeks position in medical college or state public health laboratory. Broad experience. L-482

**Chemist**, experienced in food, drug and insecticide analysis, seeks laboratory position. L-483

**Pathologist**, Board Diplomate, competent and experienced in pathologic anatomy, clinical pathology, bacteriology and tropical medicine; years of public health experience as laboratory director and research associate, consultant, professor and executive; numerous publications, excellent references. Age 40. L-472

**Serologist-Bacteriologist**, Ph.D., D.V.M., 16 years' experience in public health and hospital work, 3 years in charge Army hospital laboratory. Desires Directorship with opportunity for research. L-426

**Bacteriologist** with service experience in food bacteriology, enteric group studies, respiratory diseases, malaria and epidemiological problems, seeks position in New England or midwest. L-485

**Public Health Administrator**, B.A., M.S.P.H., recently released after 4 years' service as hospital assistant and assistant medical inspector, seeks position as administrator or health educator. Ex-

perienced in teaching field. Organizing ability. References. A-517

**Health Educator**, Woman, Negro, trained in public health, community organization, adult education, workers education and related fields and experienced as teacher, seeks position with voluntary or official agency or as teacher. H-518

**Sanitary Engineer**, 5½ years' operational experience city sewage plant, nearly 4 years Captain in Sanitary Corps, U. S. Army, seeks position as sanitary engineer in Eastern U. S. E-488

**Sanitary Engineer** seeks position in southern or western states. Experienced in food, milk and general sanitation. E-489

**Statistician and registrar** of vital statistics for past four years in large city wishes to make a change. S-461

**Veterinarian** with 3 years' experience in army meat and milk inspection seeks position with city or state health department. Well qualified in animal disease control. M-461

**Graduate veterinarian**, age 30, V.M.D. University of Pennsylvania, seeks position with city or state health department. Over 3 years' experience in army meat and dairy inspection including plant sanitary inspection. Over 6 years' experience in animal diseases and veterinary pathology. M-462

**Veterinarian**, recently released from U. S. Public Health Service, formerly in practice, seeks part time or full time position with city, state or county health department in State of Virginia or Illinois. M-463

## Advertisement

## Opportunities Available

WANTED—(a) Director of division of maternal and child health and, also, epidemiologist and director of division of preventable disease control; former position requires general public health training and some experience in maternal and child health work; latter position requires experience and training in epidemiology especially venereal disease control; well organized city health department, seven divisions; staff of 54 employees; Middle West. (b) Director of division of tuberculosis control; state department of health; tuberculosis specialist with administrative experience required; duties include serving as consultant of several sanatoria and, also, building of five tuberculosis hospitals; South. (c) Director of crippled children's program; pediatrician with public health experience or training preferred; department responsible for providing medical and surgical care of approximately 5,000 children; well staffed department, rapidly growing; permanent headquarters in university medical center; Middle West. (d) Student health physician; enrollment of 5,000 students; more than 400 on faculty; well equipped department; Pacific Coast. (e) Public health physician to serve as county health officer; duties consist of supervising school immunizations, epidemiology, venereal disease clinics and well baby conferences; well staffed department; California. (f) Public health physician to direct program for cancer control; preferably someone experienced or particularly well trained in cancerology; should be capable public speaker and able to qualify for teaching appointment on faculty of university medical school. PH3-1 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Public health nurse with extensive training and experience to accept interesting assignment in Central and South America; though knowledge of Spanish or Portuguese desirable, will consider someone willing to learn either language. (b) Supervisor and staff nurses; visiting nurses' association; supervisory position requires year's graduate training in public health nursing and experience under qualified supervision; New England. (c) Executive director; one of the leading agencies for generalized nursing located in suburb of Eastern city, immediately. (d) Director, supervisors and staff nurses

to join staff of national health association; considerable traveling; salaries for staff positions dependent upon qualifications but not less than \$2,100; salary for supervisors \$2,980 plus \$6 a day when away from headquarters; salary for director dependent upon qualifications; headquarters in Middle West and Southwest. (e) Public health nurse for executive position in high school and junior high school; vicinity of Chicago. (f) Instructor and supervisor of public health and outpatient nursing; large teaching hospital, outpatient department used for instruction of medical students; active teaching and research program; baccalaureate degree and public health preparation required; \$225. PH3-2 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—Sanitarian to direct plant and production; sanitation program of one of the country's most important food industries; must be soundly grounded in fundamentals necessary to well rounded sanitary program for food industry; capable public speaker required. PH3-3 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health educator; new public health program, emphasizing venereal diseases and social hygiene; previous experience in conducting health education program required; \$3,600-\$4,800; Southwestern city of 200,000. (b) Health educator; tuberculosis association and city health department; East. (c) Health educator; city-county health department; college town of 60,000; Middle West. (d) Assistant educational director; Chicago offices of national organization; \$3,000. PH3-4 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Several bacteriologists and serologists for public health laboratories; state department of health; rank and salaries dependent upon experience in public health laboratories; South. (b) Senior and junior bacteriologists; state department of health; senior position requires tuberculosis experience; Middle West. PH3-5 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

## Advertisement

## Opportunities Wanted

Young physician with intimate knowledge of all aspects of industrial hygiene and medicine is available; past several years, director of department of industrial hygiene, state department of health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health physician; degrees of Doctor of Medicine and Master of Public Health from Middle Western university; has been in full-time health department work since 1939 where his duties have been principally in administrative capacity; age forty-four; will go anywhere; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Dentist who has specialized in public health; D.D.S., university medical school; several years' private practice; year of postgraduate training in public health hygiene with special emphasis on public health dentistry for which he received degree of M.S.P.H.; several years, state department of health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; A.B., M.S. degrees, middle western university; experience largely administrative including eight years as associate professor of medicine, co-educational college; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### THE PLAN OF DISTRIBUTION BY THE AMERICAN RED CROSS OF THE DRIED BLOOD PLASMA DECLARED SURPLUS BY THE ARMED FORCES

During the war, large quantities of blood were given by the American people through the American Red Cross from which dried plasma was prepared for the armed forces. The supply of this material was predicated upon the needs of the Army and the Navy for a long and costly war. Because of an earlier cessation of hostilities than was reasonably to be expected in both the European and Pacific Theaters, there is now in the hands of the Army and the Navy a quantity of dried plasma which is in excess of their needs during the anticipated useful life of the plasma, namely, 5 years from the date of processing. Accordingly to Army and Navy estimates, the available surplus amounted to approximately one and a quarter million packages at the end of December.

The transfer to the American Red Cross of dried plasma declared surplus by the Army and the Navy is provided for by Public Law 457 of the 78th Congress, approved October 3, 1944. The pertinent portion of this law, Section 11 (f), reads as follows:

"No surplus property which was processed, produced, or donated by the American Red Cross for any government agency shall be disposed of except after notice to and consultation with the American Red Cross. All or any portion of such property may be donated to the American Red Cross, upon its request, solely for charitable purposes"

Under the foregoing provision of Congress, a formal request was made to the Army and the Navy that all surplus plasma be transferred to the American Red Cross. This action was taken on the ground that the American

Red Cross has a responsibility to the American people to assure that plasma and other derivatives of the blood voluntarily contributed for the members of the armed forces be utilized to the best advantage and not wasted or offered for sale or barter. In making this request, it was proposed that any surplus should be returned to the American people, who had made these supplies of plasma possible, for use in veterans hospitals and in civilian medical practice. This proposal was accepted by the Army and the Navy and accordingly they will transfer to the American Red Cross all available surplus stores of plasma and other blood derivatives.

In developing a plan for the distribution of this material it was felt that the first consideration was that the needs of the Veterans Administration be met. This was discussed with General Hawley, and it was arranged to provide him with the amount of plasma estimated will be required for use in Veterans Administration facilities during the next five years.

In planning for distribution and use in civilian medical practice there were three factors believed to be of particular importance. The distribution should be carried on in such a manner as first, to assist in making possible an accurate determination of the needs for blood and blood derivatives in the various parts of the country; second, to strengthen and stimulate the development of already established state and local civilian blood and blood derivatives programs; and third, to demonstrate the value of such programs and thus stimulate their establishment where they do not already exist.

The surplus dried plasma amounts to about one and a quarter million

packages, which it is estimated will meet civilian needs for approximately two years. Warehouse storage space is provided in each of the five Red Cross areas, the headquarters of which are located at New York City, Alexandria, Va., Atlanta, Ga., St. Louis, Mo., and San Francisco, Calif. The available plasma will be apportioned to each of these areas on a population basis, and supplied to state departments of health for distribution without charge to all physicians licensed to practise medicine, and to all acceptable hospitals for use in the treatment of any patient without charge for the product. This plan is similar to that which the state departments of health have been following in distributing the surplus immune serum globulin made available by the American Red Cross for the prophylaxis and modification of measles.

The area medical directors of the American Red Cross will make arrangements with state departments of health for a satisfactory plan for the distribution of plasma within each state, in consultation with representatives of the state medical society and state hospital association. The American Red Cross will then make an initial shipment to the health department in an amount estimated to be a 3 months' supply. This estimate will be based on the population of the state, weighted by the number of physicians and the number of general, pediatric, and maternity hospital beds. Thus, every physician may, if he desires, carry plasma with him, and hospitals may be stocked with a reasonable supply for the treatment of their patients. Replacements of plasma may be obtained on request by physicians or hospitals from the state department of health, or through the local Red Cross chapter, if the department of health does not have a local distribution center. State departments of health in turn will obtain replacements of plasma up to a 6 months' supply by requesting

it from the area office of the American Red Cross.

#### LOCAL HEALTH UNITS IN ILLINOIS INCREASE

The January, 1946, *Illinois Health Messenger* of the Illinois Department of Health reports that 14 counties have organized locally managed and financed county health departments since the passage of the permissive Searcy-Clabaugh health unit law in 1943. The 14 counties are served in 11 units, nine of one county, and one each of two and three counties.

In several instances where the populations are less than 40,000, a neighboring county may later join the unit, in accordance with the recommendations of the State Health Officer and the A.P.H.A. Committee on Local Health Units, as contained in *Local Health Units for the Nation*, recently published by the Commonwealth Fund.

#### INDUSTRIAL HYGIENE NEWS ROUND THE GLOBE

The JOURNAL is indebted to the November and December *Industrial Hygiene News Letter* for the following items selected from many of interest:

"British and Brazilian Industrial Hygienists Study U. S. Methods—Reflecting the growing interest in industrial health within their nation, Drs. R. S. F. Schilling and Donald Hunter of the British Medical Research Council, and Dr. George S. Bandeira de Melo of Brazil are at present in the United States studying American industrial hygiene practices.

"Yale to Teach Industrial Medicine—Plans for the establishment of a training institute of occupational medicine and hygiene have been announced by the Yale University School of Medicine. Undergraduate medical students will be trained in the basic approaches to occupational medicine throughout all four years of their

course. The curriculum will include instruction in sanitation, toxicology, traumatic surgery, shock treatment, rehabilitation methods, occupational diseases and their treatment, problems of ventilation, industrial medical administration, and other subjects.

"Graduate instruction in the Institute will be available to physicians working in industry, and further training will be open to industrial nurses. The Institute will carry on research in industrial health problems, and give consultative service to industry.

"Children Poisoned by Burning Battery Cases—The latest case of persons suffering lead poisoning as a result of using discarded battery cases for fuel reported to the Industrial Hygiene Division, U. S. Public Health Service, is that of five children in one family who were made seriously ill when battery cases were used to eke out the scanty coal supply in their home.

"Industrial Hygiene in the War-torn Philippines—Dr. Gregorio D. Dizon, Philippine Bureau of Health, writes of his studies in dermatitis due to arsenic poisoning in a large copper mine in the islands—studies interrupted by the late war. He also studied mass benzol poisoning at the Cavite Naval Base during the Japanese occupation, but the records were burned by Japanese after the fall of Manila.

"The loss of his industrial hygiene literature and records, most of them burned, is felt keenly by Dr. Dizon. He appeals to members of the A.I.H.A. to send whatever can be spared to start a new library.

"Polarograph in Oregon—Dr. Harold M. Erickson, Oregon State Health Officer, reports that the Division of Industrial Hygiene has acquired a Heyrovsky Polarograph, the only one of its kind at present on the Pacific Coast. This instrument can be used for determination of minute quantities of toxic mineral contaminants of work-

room atmosphere. Local health units and other state departments have been invited to make use of the polarograph as needed.

"Virginia Coal Mines Study Hazards—Environmental exposures and conditions in a Virginia coal mine are being studied by the Bureau of Industrial Hygiene, of the State Department of Health. Preliminary study and a few atmospheric samples indicate a potential high exposure to coke and coal dust, sulfur dioxide, hydrogen or sulfide, and extreme temperature changes. More detailed investigation has been undertaken. Request has been received from another coal company, asking for environmental survey of conditions in their mines."

#### THE MAYO PROFESSORSHIP IN PUBLIC HEALTH

The University of Minnesota has announced that its first permanently endowed professorship has been created as the Mayo Professorship in Public Health under an endowment by the Mayo Properties Association. According to the announcement made in Minneapolis, a gift of \$150,000 has been received toward the salary of the professorship, which may be supplemented from the income of the Mayo Foundation for Medical Education and Research. Harold S. Diehl, M.D., the Dean of Medical Sciences, pointed out that this professorship is a significant milestone in the development of the University, assuring for the School of Public Health a permanent professorship beyond what the University otherwise could provide.

The University of Minnesota School of Public Health was established about two years ago as an outgrowth from the Department of Preventive Medicine and Public Health in the School of Medicine. Gaylord W. Anderson, M.D., Dr. P.H., has been Professor of Public Health and Director since its

establishment. The Mayo Properties Association was formed by the late Drs. Charles H. and William J. Mayo and their associates to hold and manage assets of the Mayo Clinic. The Mayo Foundation for Medical Education and Research is an educational division of the University of Minnesota on a graduate level. It was first endowed with \$2,000,000 in 1917, which sum was subsequently increased by \$500,000 in 1934.

#### ADVANCED STUDY FOR GRADUATE NURSES

In accordance with instructions of the President and Congress, Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, set October 15, 1945, as the final date on which federal funds would be available to graduate nurses for advanced study. Under terms of the Bolton Nurse Training Act of June, 1943, federal scholarships were provided for graduates, to increase the number of instructors and to prepare more nurses for such important specialized fields as public health and psychiatric nursing. As of October 15, 1945, approximately 15,000 graduate nurses had received federal aid for this purpose. Where these nurses could not be spared from their positions to take postgraduate preparation a series of on-the-job courses was brought to the hospital as an emergency measure to aid nurses who were pressed into positions for which they were not fully prepared. Of the 15,000, about 5,000 were enrolled in these intensive courses.

#### LEGION OF MERIT TO LT. COL. MCCOY

The U. S. Army has announced the award of the Legion of Merit to Lt. Col. Oliver R. McCoy, Director of the Tropical Disease Control Division, Preventive Medicine Service, Office of the Surgeon General, for fostering activity in the field of malaria treatment and control, in the dissemination of knowledge pertinent to tropical disease con-

trol in professional circles and among troops, thus maintaining their health while operating in overseas areas. His "outstanding achievements in bringing into being a means of production of quinine and related antimalarials signify a magnificent contribution to mankind."

#### PAN-AMERICAN CONGRESS OF PEDIATRICS

Announcement has been made by Dr. Felix Hurtado of Havana, Cuba, of the plans for the first Pan-American Congress of Pediatrics to be held in New York City in the fall of 1948. The Chairman of the Organization Committee is Dr. J. L. Durand of Seattle, Wash. Dr. Hurtado is Associate Chairman. Latin American members of the committee include:

Dr. F. Gomez, Mexico City, Mexico  
 Dr. E. Soto, Pradere, Cuba  
 Dr. C. Kruindick, Lima, Peru  
 Dr. M. A. Barboza, Rio De Janeiro, Brazil  
 Dr. C. Umana, Bogota, Colombia  
 Dr. A. Scroggie, Santiago, Chile  
 Dr. V. Escardo, Montevideo, Uruguay

According to Dr. Hurtado, the aims of the Congress will be:

1. Consideration of scientific and cultural affairs relating to the diagnosis and treatment of the diseases of children
2. A review of the methods of teaching pediatrics
3. Consideration of newer systems of medical practice in a changing society

#### MENTAL HYGIENE PROGRAM IN BERKELEY'S DEPARTMENT OF HEALTH

On an experimental basis the City of Berkeley, Calif. (population, 97,000), has recently developed a city mental hygiene program under the direction of Frank L. Kelly, M.D., Dr.P.H., the City Health Officer. With an initial budget of \$11,500, of which \$5,000 is a foundation grant, and \$4,500 from the State of California, the project will be undertaken for a year, at the end of which time a full report will be made on techniques developed, methods of

financing, and the part to be played by the citizens' advisory committee in the development of a program.

#### FLUORINE AND WATER SUPPLY

Extension of the fluorine studies under way in Newburgh and Kingston, N. Y., and in Grand Rapids, Mich., is indicated by a recent decision of Evanston, Ill., and Sheboygan, Wis., to add fluorine to the water supply. In Evanston coöperation between the city and state health departments and the University of Chicago dental clinic provides for a 15 year study to determine whether the addition of fluorine to water will protect teeth from decay. Mouth x-rays will be made of all children in the 6 to 8 and 12 to 14 year age groups.

In Sheboygan the Health Department, which is administering the program will make periodic reports to the city council.

#### SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION

The South Dakota Public Health Association, the newest affiliated society of the A.P.H.A., held its Seventh Annual Meeting in Mitchell on December 14 and 15. At this meeting the following new officers were elected:

*President*—C. E. Sherwood, M.D., Madison  
*Vice-President*—H. Russell Brown, M.D., Watertown  
*Secretary-Treasurer*—Gilbert Cottam, M.D., Pierre

#### COURSE IN PUBLIC HEALTH PRACTICE FOR VETERANS

The George Washington University School of Medicine, Washington, D. C., has announced that two weeks of instruction in public health practice on a full-time basis will be offered to physicians beginning March 11. The first week will be devoted to the study of various infectious diseases, including problems of diagnosis and treatment and epidemiology. The second week

will be devoted to the study of facilities for public health practice at the National Institute of Health and in large city and county units. According to the announcement, all costs of the course are met for medical veterans by the provisions of the G.I. Bill of Rights. Inquiries should be directed to the Director of Postgraduate Instruction, George Washington University School of Medicine, 1335 H Street, N.W., Washington 5, D. C.

#### TYPHUS COMMISSION MEDAL TO CAPTAIN DAITZ

Captain Bernard D. Daitz, Sn.C., has been awarded the Typhus Commission Medal by the Surgeon General of the U. S. Army for "meritorious service in connection with the work of the United States of America Typhus Commission in Naples during the winter of 1943-1944." The citation reads in part: "Captain Daitz assisted in the organization and development of the system of recording all cases of typhus fever reported in Naples. This work included supervision of an office of records, development of a useful reporting form and provision of daily and weekly reports. In connection with the reporting system, he participated at times in the activities of the typhus case finding teams. His services were an important factor in assembling and making available information essential to the successful prosecution of measures for the control of typhus."

#### PUBLIC HEALTH SERVICE TO SURVEY CHICAGO

Dr. Frank V. Meriwether, Director, District of the U. S. Public Health Service, has announced a survey of the Chicago health facilities by his office. The study was requested by the Chicago Medical Society, the Institute of Medicine of Chicago, and the Health Division of the Chicago Council of Social Agencies, and will probably require a



year to complete. Brig. Gen. James Thompson will direct the project.

**BRIGADIER GENERAL STANHOPE BAYNE-JONES AWARDED DISTINGUISHED SERVICE MEDAL**

Brig. Gen. Stanhope Bayne-Jones, Deputy Chief of the Preventive Medicine Service, Office of The Surgeon General, has been awarded the Distinguished Service Medal for his outstanding "contribution to the maintenance of health within the Army."

"As Administrator of the Epidemiological Board," the citation stated, "he directed the extension, administration, and military application of the world-wide research and control program conducted by this board and its ten commissions."

Born in New Orleans, La., General Bayne-Jones is a graduate of Yale University and Johns Hopkins University Medical School. He entered the Medical Reserve Corps in 1915 and served throughout World War I. From 1917 to 1918 he served with the British Expeditionary Forces in France and Italy and later with the AEF in France and Germany, and has been decorated with the British Military Cross, the French Croix de Guerre, and the Silver Star with Two Oak Leaf Clusters.

Prior to being ordered to active duty in 1942, General Bayne-Jones was Professor of Bacteriology at Yale University and had held the position of Dean of the School of Medicine at that University.

**U. S. PUBLIC HEALTH SERVICE NEEDS PHYSICIANS, DENTISTS AND NURSES**

Appointments to fill vacancies in the Reserve Corps of the U. S. Public Health Service are now being made, and examinations for Regular Corps appointments will be held in April and May. Physicians, dentists, and nurses are needed immediately for duty in hospitals, in the Tuberculosis and

Venereal Disease Control programs, and in other activities of the Public Health Service.

Pay and allowances, established by law, are identical with those for medical officers of the Army. All travel expenses, including travel to first station, are paid by the Service.

Appointments to the Reserve Corps are made on a basis of review of data furnished by the applicant. Physical examination is required. Regular Corps appointments require appearance before a Board, and a written professional examination. A person receiving an appointment in the Reserve Corps immediately, may, if he desires, take the examinations for the Regular Corps at the time they are held.

Those interested in either immediate appointment in the Reserve Corps, or in taking the examination for the Regular Corps, should request application forms of the Surgeon General, U. S. Public Health Service, Washington, D. C.

**FLORIDA PUBLIC HEALTH ASSOCIATION**

At a recent meeting, the following new officers were elected:

*President*—George A. Dame, M.D., Jacksonville

*First Vice-President*—Homer D. Venters, Tampa

*Second Vice-President*—Ruth E. Mettinger, Jacksonville

*Secretary-Treasurer*—Edward M. L'Engle, M.D., Jacksonville

The following four sections were officially organized and recognized:

Sanitation Section

Health Officers' Section

Public Health Nursing Section

Clerical Section

**THE CHURCH AND THE HEALTH OF THE COMMUNITY**

Last October a number of Harlem health agencies and churches, recognizing the close interrelation of their separate interests, sponsored a three week "Health Institute for Ministers."

Thirty ministers attended the Institute and at a special ceremony received certificates in recognition of their interest in better health from Dr. Ernest L. Stebbins, Health Commissioner of New York City.

#### NEW YORK TUBERCULOSIS AND HEALTH ASSOCIATION

The 14th Annual Conference of the New York Tuberculosis and Health Association will be held March 21 at the Hotel Pennsylvania.

Sessions on various phases of community health and welfare will be conducted throughout the one day meeting.

Election of officers of the Tuberculosis Sanatorium Conference of Metropolitan New York, which will meet simultaneously, also will be held.

#### TERRITORY OF HAWAII ADOPTS COMMUNICABLE DISEASE REPORT AS OFFICIAL

C. L. Wilbar, Jr., M.D., President of the Board of Health of the Territory of Hawaii, Honolulu, has announced that the Board of Health of the Territory has adopted as official for Hawaii the report on the *Control of Communicable Diseases*, published by the American Public Health Association.

#### "SOCIAL STATISTICS" COMES HOME

Two decades ago, in 1924, Raymond Clapp of the Cleveland Welfare Federation, in cooperation with the National Community Chests and Councils, undertook a study of the expenditures and services in the local community councils of 19 cities. At the beginning of 1946 the National Community Chests and Councils became responsible for national direction of the Social Statistics Project hitherto sponsored by the U. S. Children's Bureau. Thus a project begun by a private agency as a demonstration and later turned over to and matured in a public agency because

of its greater resources and stability, has now been turned back to the private agency that first gave it birth.

The history of the undertaking is briefly: In 1927, after Mr. Clapp's 1924 study, Community Chests and Councils and the Community Research Committee of the University of Chicago organized a joint committee to plan for the collection of monthly reports from social agencies. By 1929, reports were received from 25 urban areas in 16 states, and the data were analyzed in a volume called "Registration of Social Statistics."

In 1930 the project was turned over to the Children's Bureau, cooperation continuing from Community Chests and Councils and other national agencies, chief among them the Russell Sage Foundation. In the 16 years of the bureau's sponsorship the project was expanded greatly. Between 1933 and 1937, 20 issues of the *Social Statistics Bulletin* were published, including figures on a wide range of social services.

Beginning in 1937, Social Statistics became a supplement to the Children's Bureau monthly, *The Child*. It has published statistics on hospital and outpatient services, on public health nursing, juvenile court and juvenile delinquency statistics, employment certificate statistics, data on day nursery and foster care, periodical reviews of relief statistics, figures on care of crippled children, neglected and delinquent children, group work statistics, maternity home care and maternity homes, statistics on homes for aged, chronically ill and dependent adults, transient service statistics, data on sources of funds for health and welfare programs, and finally an analysis of services of state health departments to mothers and children.

The Community Chests and Councils is again fathering this project. It will be supervised by a national advisory committee made up chiefly of local

community council executives but including also statisticians, among them Ralph Hurlin of the Russell Sage Foundation and Anne Geddes of the Federal Security Agency, who were active in the early days of the project, and Edward Schwartz who supervised the project in the Children's Bureau. Three members of the A.P.H.A. are on the Committee: Professor Ira V. Hiscock, Bertram Black, the Chairman of the committee, and Sara Kerr, Executive Secretary of the Buffalo Foundation. The director of the 1924 study, Raymond Clapp, and the Editor of *Survey Mid-Monthly*, Bradley Buell, are also committee members.

In addition to a central staff, present plans are for regional representatives on a part-time basis for field service and regional promotion. Regional workshops are also planned for the coming summer. Review of the report forms is now under way and some revisions may be made for the reporting year 1947. Currently 44 urban areas have participated in the project over a period of time.

#### BARUCH COMMITTEE ON PHYSICAL MEDICINE

Bernard M. Baruch in 1944 made an initial grant of \$1,100,000 to the Baruch Committee on Physical Medicine, to advance and encourage research, teaching, and training in the field of physical medicine—and to bring the benefits of this branch of medicine to the rehabilitation of persons maimed in war, industry, or by illness. The first annual report of the committee, prepared by the medical director, Frank H. Krusen, M.D., of the Mayo Clinic, has outlined the progress in attaining the objectives of Mr. Baruch's endowment. Eleven medical schools share funds in the original grants: Columbia University, \$400,000; New York University, \$250,000; Medical College of Virginia, \$250,000; Massachusetts Institute of

Technology, \$50,000; University of Minnesota, \$40,000; University of Southern California, \$30,000; Harvard University, \$25,000; University of Iowa, \$15,000; University of Illinois, \$15,000; Washington University, \$10,000; Marquette University, \$5,000; Harvard received a later special grant of \$30,000 for a special fellowship program.

#### APPOINTMENTS TO NATIONAL ADVISORY CANCER COUNCIL

Appointment of Dr. Robert S. Stone, Professor of Roentgenology at the University of California, and Dr. Charles B. Huggins, Professor of Surgery at the University of Chicago School of Medicine, for three year terms on the National Advisory Cancer Council has been announced by Surgeon General Thomas Parran of the U. S. Public Health Service, Federal Security Agency.

The new Council members replace Dr. Baird Hastings of Harvard University and Dr. James B. Murphy of the Rockefeller Institute, whose terms have expired.

The National Advisory Cancer Council is composed of six members in addition to the Surgeon General of the Public Health Service, who is chairman, ex officio. It serves as an advisory body to the Surgeon General in the direction of the work of the National Cancer Institute.

#### PERSONALS

##### Central States

ANTHONY J. BOROWSKI, DR.P.H.,\* was appointed Registrar and Superintendent of the Bureau of Vital Statistics of the Department of Health, City of Toledo, Ohio, on November 15.

HARRY E. CARNES, M.D.,† has been discharged from the Army and has rejoined the staff of Parke, Davis &

Company, in the Division of Biological Production, Detroit, Mich.

CARL W. HAMMER, M.D., Oxford, Mich., has been named Assistant Professor of Health Education at the Montana State College, Bozeman, and Director of the Student Health Clinic.

PERCY L. HARRIS, M.D.,† Ravena, O., Health Commissioner of Portage County since 1938, has been appointed Chief of the Division of Communicable Diseases of the Ohio State Department of Health.

#### CHANGES IN HEALTH PERSONNEL IN ILLINOIS:

IRENE FAHEY, M.P.H.,† was employed as Health Educator by the Cook County Department of Health, effective November 1.

GERTRUDE KOENEMAN, R.N.,† has resigned from District 18, Illinois Department of Public Health, to enroll in the University of Minnesota for further graduate work. She will be replaced by THERESA KERN, R.N., former Supervising Nurse, Williamson County Health Department.

CAPTAIN CALVIN COREY† resumed his duties as Bacteriologist with the Illinois Department of Public Health, Springfield, effective October 16.

CAPTAIN GEORGE K. HENDRIX† resumed his duties as Sanitary Engineer with the Illinois Department of Public Health, Springfield, effective October 16.

MAJOR HERBERT E. McDANIELS\* resumed his duties as Bacteriologist with the Illinois Department of Public Health, effective December 1.

MELVIN T. JOHNSON, M.D.,† has been named Medical Director of Iowa

Public Health District Number 5, Fort Dodge, Ia., succeeding FORREST J. AUSTIN, M.D.,† now of Omaha, resigned.

RUSSELL E. PLEUNE, M.D., Hancock, Mich., formerly Director of the Houghton-Keweenaw-Baraga Health Department and recently released from the Army, has been appointed Deputy Commissioner of Health of the upper peninsula with offices in Escanaba, with the State Board of Health, succeeding WILBER J. M. MENKE, M.D.†

ELDRED V. THIEHOFF, M.D.,\* has been appointed City Health Commissioner of Peoria, Ill., to succeed the late SUMNER M. MILLER, M.D.,\* effective January 7, 1946. Dr. Thiehoff has been associated with the Michigan Dept. of Health since 1940, for one year as Assistant Director of the Bureau of Local Health Services, and since as Director of the same Bureau. In addition, he was Deputy State Health Commissioner for 3 years.

#### Eastern States

BURTIS B. BREESE, JR., M.D., Rochester, N. Y., has been named Deputy Health Officer of the Rochester Health Bureau, effective January 1. Dr. Breese is the first of two new officers to be appointed to positions in the Health Bureau. He will be concerned chiefly with communicable diseases. A second health officer, who will specialize in venereal diseases, will be appointed later.

MRS. HELEN R. COOLEY of the staff of the State Committee on Tuberculosis and Public Health, State Charities Aid Association, New York City, has been appointed Executive Secretary of the Tompkins County Tuberculosis and Public Health Association at Ithaca, N. Y., succeeding LOUISE BABCOCK, who has resigned to accept a position in California.

\* Fellow APHA  
† Member APHA.

EDITH M. GATES,\* formerly in charge of health education with the National Board, Y.W.C.A., New York City, has recently been in Cyprus on the staff of UNRRA and concerned with the repatriation of displaced persons. More recently she has been working in vocational rehabilitation of refugees in Switzerland as the representative of the American Christian Committee for Refugees.

HELEN S. MITCHELL, PH.D.,\* of New Haven, Conn., was appointed Professor of Nutrition, Department of Home Economics at the Carnegie Institute of Technology, Pittsburgh, Pa., effective January 28.

#### CHANGES IN HEALTH OFFICERS IN NEW YORK STATE:

- JOHN A. CONWAY, M.D.,\* dean of New York District State Health Officers, retired January 1 after 31 years' service in the State Department of Health. For many years, he has served the counties of Allegany, Chemung, and Steuben from headquarters in Hornell.

DANIEL P. McMAHON, M.D.,† formerly District State Health Officer in Amsterdam, N. Y., has returned from military service. He will serve as District State Health Officer in the Hornell district.

ALEXANDER ZEISSIG, D.V.M., PH.D., has been appointed Veterinary Consultant on rabies on the staff of the Division of Communicable Diseases.

WALTER M. PAMPHILON, M.D., Willard, N. Y., Assistant Director of the Willard State Hospital, has been named Assistant Commissioner of the New York State Department of Mental Hygiene. Dr. Pamphilon, who had previously been detailed as Acting Medical Inspector, has been

assigned to the Inspection Service of the Department and will be on duty in the New York City office for part time, besides assisting with the Department's program for post-war building.

JOHN B. PASTORE, M.D., has been appointed Executive Director of the Hospital Council of Greater New York. He formerly was Assistant Director of New York Hospital where he had considerable experience in general administration and the development of special programs. Dr. Pastore has participated in several projects at New York Hospital and Cornell Medical College and has taken an active interest in hospital problems in the community. He will direct the planning and coordinating programs of the hospital council.

WILLOUGHBY J. ROTHROCK, JR., M.D., Philadelphia, Pa., has been assigned by the U. S. Public Health Service as Director of the Tuberculosis Control Program for the Chattanooga-Hamilton County Health Department, Tennessee.

WILSON G. SMILLIE, M.D.,\* Professor of Public Health at the Cornell University School of Medicine and Member of the Association's Committee on Professional Education, is Chairman of the newly created Public Health Committee of the New York County Medical Society.

EDWIN F. VOIGT,\* Managing Director of the Biological Division of Wyeth, Inc., Philadelphia, expects to leave their employ shortly. Prior to working with Wyeth, he was for 20 years associated with Lederle Laboratories, Inc., at Pearl River, N. Y., as Bacteriologist, Assistant Director, and Director of the Biological Division.

#### Southern States

ASBARNES, M.D.,† Jefferson City, Mo., has joined the staff of the Office

\* Fellow A.P.H.A.  
† Member A.P.H.A.

of the Medical Director, American Red Cross, in charge of general medical services. After more than 4 years' service in the Army Medical Corps, Dr. Barnes was recently discharged with the rank of colonel. He served 22 months in North Africa, Sicily and Italy.

BRIGADIER GENERAL RAYMOND W. BLISS has been appointed Deputy Surgeon General to succeed MAJOR GENERAL GEORGE F. LULL,† retired. In addition to his new responsibilities, General Bliss will continue to handle the duties of Assistant Surgeon General and Chief of Operations Service. His outstanding contributions to the achievements of the Medical Department in these capacities won him the Distinguished Service Medal.

MARJORIE GOOCH, Sc.D.,\* has transferred from the Children's Bureau of the Dept. of Labor to The Division of Research and Statistics of the Social Security Board in Washington, D. C.

MAJOR CLIFFORD H. GREVE † has been released from the Army to inactive duty after four years of service. During this time, he served as Chief of the Statistical Division, Michigan State Headquarters for Selective Service and as Chief of the Medical Statistics Section of National Headquarters of the Selective Service System. Mr. Greve has assumed a position as Senior Statistician in the Bureau of States Services of the U. S. Public Health Service at Bethesda, Md.

LAWRENCE KOLB, M.D., Washington, D. C., formerly Chief of the Mental Hygiene Division of the U. S. Public Health Service, has been appointed Deputy Medical Director of the State Department of Mental Hygiene in California. This post, the first of its kind in California, was created by the 1945 legislature.

#### CHANGES IN HEALTH OFFICERS IN NORTH CAROLINA:

HAROLD C. WHIMS, M.D.,† Newton, Health Officer for Catawba County, has resigned to become Health Officer of Buncombe County, with headquarters in Asheville.

ZACK P. MITCHELL, M.D.,† Shelby, Health Officer of Cleveland County, has been named Health Officer of Iredell County.

LT. COL. JOHN W. REGAN, M.C., U.S.A.,† who has been Assistant Director of the Sanitation and Sanitary Engineering Division, Preventive Medicine Service, Office of the Surgeon General, Washington, has been appointed Director of that Division. Colonel Regan is a graduate of the Harvard Medical School in 1936.

ROY J. SETTLE, M.D.,† recently discharged from the Army Medical Corps, has been appointed Director of the Williamson County Health Department, Tennessee, succeeding WILLIAM B. FARRIS, M.D.†

THEODORE R. SHROP, M.D.,† following his release from active duty with the U. S. Public Health Service, is now serving as Deputy State Health Officer of the Maryland State Department of Health, assigned as Health Officer of Howard County, with offices at Ellicott City, Md.

WINFORD H. SMITH, M.D., for 34 years Director of the Johns Hopkins Hospital, will retire March 31. His successor will be EDWIN L. CROSBY, M.D.,\* Assistant Director since 1940. Dr. Smith was President of the American Hospital Association in 1916 and the first President of the Maryland-District of Columbia Hospital Association of 1941. Before coming to Johns Hopkins, Dr. Crosby was associated with the New York State Health Department.

\* Fellow A.P.H.A.

\* Member A.P.H.A.

ELSBETH H. VAUGHAN, R.N.,\* Washington, D. C., recently resigned from the Red Cross Nursing Services. Having resigned as Director of Public Health Nursing and Disaster Nursing in 1937, Mrs. Vaughan returned to the Red Cross in 1940, and became Director of Nursing in the Midwestern Area. In 1935 Mrs. Vaughan was awarded the Florence Nightingale medal.

#### CHANGES IN HEALTH OFFICERS IN VIRGINIA:

WILLARD W. GRIGGS, M.D., Newport News, has been named Health Officer of the Page-Warren-Shenandoah Health District, effective November 1.

JAMES M. SUTER, M.D.,\* Bristol, has returned to service with the Virginia Department of Health as Health Officer of the Smyth-Washington-Bristol Health District, effective December 6.

FREDERICK C. HEATH, M.D., Laureldale, Pa., has been appointed Health Officer of the Giles-Montgomery-Radford Health District, with headquarters at Christiansburg, effective January 1.

#### Western States

HARRY V. GIBSON, M.D.,† Health Officer for a number of years of Great Falls, Mont., has been placed in charge of the reorganized Health Department in Great Falls and Cascade County.

GEORGE HILL HODEL, M.D.,\* of Los Angeles, Calif., is en route to China on a public health mission for UNRRA, in the capacity of Chief Regional Medical Officer. Dr. Hodel is Chief of Staff of the First Street Clinic, Los Angeles, and was for several years Chief of the Division of

Social Hygiene in the Los Angeles County Health Department. His assignment to UNRRA is expected to last until the spring of 1947.

MARTIN KARR, M.D., San Mateo, Calif., has been employed as Medical Officer in the State Bureau of Maternal and Child Health and assigned to the Bureau of Vocational Rehabilitation, State Department of Education, where he will give assistance in developing the new physical restoration program of that agency along the lines of the medical care programs of the Department of Public Health.

DOUGLAS G. MACPHERSON, M.D., San Francisco, Calif., formerly Director of the Los Angeles City Division of Industrial Hygiene, is now Chief of the Los Angeles County Division of Industrial Hygiene, replacing HUGH E. DIERKER, JR., M.D.,† who has become Medical Director of the Southern California Division of the General Motors Corporation.

THOMAS F. MANCUSO, M.D., Acting Director of the Division in Industrial Hygiene, Oregon State Board of Health, Portland, has been appointed Chief of the Division of Industrial Hygiene of the Ohio Department of Health.

A. V. NASATIR, M.D.,\* has returned from nearly four years of military service to his former position as Director of the Division of Industrial Hygiene, City of Los Angeles Department of Health. Dr. Nasatir served in an industrial medical capacity in this country and went through the European invasion with the First Army during which he was assistant G-5 of the First Army, Chief of the Public Health Section.

GEORGE F. O'BRIEN, M.D., Sacramento, Calif., has been appointed Health Officer of Stanislaus County to succeed J. LYLE SPELMAN, M.D.,† of Cenese, resigned.

\* Fellow A.P.H.A.

† Member A.P.H.A.

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## Opportunities for International Health Activities

HUGH R. LEAVELL, M.D., DR.P.H., F.A.P.H.A.\*

*Rockefeller Foundation, New York, N. Y.*

TODAY'S opportunities for effective international coöperative organization and administration in the health field are greater than ever before. Enormous problems cry out for solution. And at the same time the United Nations Organization is being set up, a great new venture with machinery designed realistically to attack world problems. Experience of the past is available to serve as a guide for future operations, so that previous mistakes may be avoided, and yesterday's considerable record of successful joint activities extended. There is less occasion for controversy in the health field than in almost any other.

This really unique situation demands aggressive action and the highest quality of leadership, much of which must come from America just now. Our resources in trained health personnel are greater than at any previous period in our history. During the war our losses and suffering have been less

severe than experienced by many other nations. Should we fail to grasp this opportunity and accept our responsibility we will probably never again have a chance equally good.

The world has new difficulties demanding attention in addition to the old health problems of communicable disease, malnutrition, inadequate housing and a host of others. The great speed of modern transport and communication and the destructiveness of modern warfare, atomic and otherwise, have created opportunities beyond our previous dreams. Whether or not he likes the idea, the health of a man's neighbors concerns everyone on this planet. Even with better technical knowledge and more effective tools at hand than ever before our health defenses can be only partially effective unless built on a firm international or supra-national framework.

Past and present experience can serve as useful guides for action. The Health Section was unquestionably one activity of the League of Nations which made most important contributions to world welfare and happiness. There is enormous value in the communicable dis-

\* Recently on active duty as Senior Surgeon (R), U.S.P.H.S., assigned as Deputy Director, Health Division, United Nations Relief and Rehabilitation Administration, European Regional Office, London, England.



ease intelligence services and other functions carried on by the Pan American Sanitary Bureau and by the Office Internationale d'Hygiene Publique in Paris. In UNRRA the Health Division has the responsibility of administering the International Sanitary Conventions of 1944 as well as other duties related to relief and rehabilitation of war-torn territories and populations of the United Nations. These agencies already carry on tasks recognized as essential, and have personnel with rich experience arising from their work as international civil servants. In addition a number of philanthropic organizations have acquired a very useful body of information from widespread and productive international health projects.

Thus there are a number of people equipped to advise on the pitfalls to be avoided as well as the most profitable fields for future development in international health organization and action. It remains to be seen how these available assets can be used most effectively in setting up the health section which is to be a part of the United Nations Organization. Many competent persons are carefully weighing the situation and we may confidently expect definite proposals in the very near future.

Naturally, only a few will be called on to make the weighty decisions required. What can other health workers in America do to help solve these questions which so vitally affect us?

We have numerous opportunities if we are willing to seek them out and grasp them as they arise. One profitable approach lies in the cultivation of better understanding of other nations, their problems and their people. This may come from study of needs existing elsewhere and the resources and organization available to meet them. In addition, many of us will be in personal contact with "foreign" health workers coming to America as students, fellows

or observers. They will seem less foreign if we take the initiative and get to know them more than superficially. Undoubtedly we shall discover that our visitors can make real and valuable contributions to American health practice in return for what we do in facilitating their observation of our methods. A smaller, more fortunate group of us will be able to visit other countries. This will be the best method of gaining understanding, provided we travel as the learners which all good teachers must be.

In discussions among ourselves it is apparent that often we are none too certain of the value of some of our health practices. Perhaps distance lends enchantment to them when we expect other peoples to adopt American ideas more or less at a single gulp without stopping for breath. And this even though conditions may be vastly different from ours in the country concerned and the health movement in quite another phase of development.

A good many of us associated with UNRRA were almost incredulous when it became evident that some of the devastated countries, while quite ready to accept needed medical supplies, were very hesitant to accept suggestions for the improvement of their admittedly inadequate health services. Some of us had failed to recall how long it has taken us to reach our present level of attainment. We had neglected also to ask ourselves how willingly we in America would have accepted advice from "foreigners" even though they came to us bearing much needed gifts. Perhaps it was quite natural for health authorities of the countries being assisted to wonder how we could expect to gain an authoritative knowledge of their needs within only a few weeks or months of residence.

If approached philosophically and if we avoid annoyance at what may appear rebuffs, this UNRRA experience

can be extremely useful. Thoughtful consideration may show where mistakes have been made and where expectation has greatly exceeded the probability of success, at least within a relatively short period of time.

Those who have been in Europe recently find upon returning to America what seems a strange indifference to world problems. This may be a sort of war weariness, but even if that is the explanation America has much less reason to be war weary than most other nations. We have had to give up comparatively little in the way of comforts. Our food supply has been more than adequate, and war damage of our buildings restricted to that resulting from the crash of one of our own planes into the Empire State Building. We are surely in physical condition for world leadership provided our moral fiber is sufficiently strong.

My own experience in Europe was limited to a year, mostly in England, but also in Germany, France, and Belgium. Destruction of buildings is greater in Germany than elsewhere and undoubtedly the German people are having an extremely tough winter

with many deaths probable. Malnutrition and exposure have reduced resistance to communicable disease to the point where case fatality rates are three or four times the normal. The British people are tired after several years of suffering, but their spirit has been remarkably good throughout. British public health practice is sufficiently similar to ours for us to have no serious difficulty in working closely together on common problems, and there is much that we can learn from them. Close collaboration between British and American military forces is recognized as an outstanding product of this war. There is every reason to believe that it may be successfully continued to strengthen the peace. And in the health field the prospect is particularly bright.

Even with a limited experience, my convictions of the need for present international health coöperation are very strong. Those who have seen conditions abroad have a real responsibility to point out to their coworkers the possibilities inherent in the present situation. This appeal is made in that spirit.

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## The Norton Medical Award

Announcement has recently been made of the third annual Norton Medical Award of \$3,500. This award of the publishing firm W. W. Norton & Company is offered to encourage the writing of books for laymen by medical men or books which relate medicine to society and demonstrate the spirit that inspires and sustains men of medicine in their work. The final date for delivery of manuscripts is November 1, 1946, and the award will be announced and the manuscript published early in

1947. Full details may be secured from W. W. Norton Company, 70 Fifth Avenue, New York 11.

The first of these awards was made to Dr. Carl Binger in 1945 for *The Doctor's Job*. The winning book for 1946, announced in March for May publication, is *Doctors East, Doctors West! An American Physician's Life in China*, by Dr. Edward H. Hume. Dr. Hume spent nearly twenty-five years in the Yale Medical College in China of which he was a founder and organizer.

# Bacteriologic Procedures in the Evaluation of Methods for Control of Air-borne Infection

WILLIAM F. WELLS, F.A.P.H.A., C.-E. A. WINSLOW, DR.P.H.,  
F.A.P.H.A., AND ELIZABETH C. ROBERTSON, M.D., PH.D.

*School of Medicine, University of Pennsylvania, Philadelphia; New Haven, Conn.;  
and Department of Pediatrics, University of Toronto*

MICROÖRGANISMS ordinarily invade the atmosphere on dust particles, in droplets, or in the nuclei of instantaneously evaporated droplets, normally differentiated as follows:

The differentiation by bacteriologic procedure of each of these three classes of air-borne infection has profoundly changed our concepts of disease transmission. Thus the demonstration, a

	<i>Dust</i>	<i>Droplets</i>	<i>Droplet Nuclei</i>
SOURCES OF MATERIAL	Solid matter; fabrics, etc.	Fluids from nose and throat	Solid residues of evaporated droplets
PRODUCTION	Attrition	Atomization of fluids	Evaporation of droplets
MODE OF SUSPENSION	Air wafted	Projected into air by sneezing, etc.	Caught in air by evaporation
PARTICLE DIAMETER	10 to 100 microns	Larger than 100 microns	2 to 10 microns
SETTLING VELOCITY	Foot per minute to foot per second	Greater than foot per second	Less than foot per minute
TIME OF SUSPENSION	Limited by settling velocity	Less than 3 seconds	Limited indoors by ventilation
FLIGHT RANGE	Hovers in clouds	Immediate in space	Dispersed throughout indoor atmosphere
CONCENTRATION	Locally high	Immediately intense	Diffuse and dilute
AGE OF INFECTION	Survivors of accumulation	Fresh	Limited by ventilation
TYPES OF ORGANISMS	Mostly saprophytic	Parasitic and pathogenic	Parasitic and pathogenic
NUMBER PER CU. FT.	Normally below 100	Indeterminate	Normally below one
BACTERIA/PARTICLE	Clumps	Indeterminate	Seldom more than one
INHALATION	Trapped in nose and throat	Indeterminate	Penetrate to lung

	<i>Dust</i>	<i>Droplets</i>	<i>Droplet Nuclei</i>
MODE OF INFECTION	Endemic infection of nose and throat	Contact infection	Epidemic contagion
PATTERN OF INFECTION	Static	Indeterminate	Dynamic
VULNERABILITY	Resistant	Indeterminate	Vulnerable to chemical and physical agents
REMOVAL	Filtration and electrostatic precipitation	Best by face mask	Electrostatic precipitation; difficult by filtration
CONTROL	Air cleanliness	"spacing out"	Sanitary Ventilation (air change and equivalent air disinfection)

century ago, that boiled fluids might not spoil if protected from floating germs led to the science of bacteriology and the germ theory of disease. Air-borne germs seemed to offer a rationalization of the generally accepted miasmatic theory, and the study of air-borne organisms dominated the early development of bacteriology. But dust-borne bacteria were found to be mostly saprophytic; pathogenic organisms causing intestinal disease were found mostly to be ingested; and the most typical miasm of all—malaria—was found at last to be insect-borne. The validity of these newer concepts was abundantly confirmed by the success of sanitary control based on analytical procedures.

But respiratory infections, caught from persons sharing indoor atmospheres—i.e., contagious diseases—did not yield to sanitary control; for, almost fifty years ago, bacteriologists had concluded that these infections also were not air-borne, because droplets coughed or sneezed into the air did not settle upon Petri plates exposed beyond a few feet. Our generation, taught that contagious disease was transferred by immediate contact—for proximity in time and space required to infect by such droplets was construed as a form of contact—paid little heed to sanitary ventilation.

This fallacy was however refuted, a decade ago, by recovery of virulent or-

ganisms in the residues of instantaneously evaporating droplets; these nuclei settled so slowly that they had been missed on exposed Petri plates. If the nuclei of infected droplets, coughed or sneezed into the air, drift like cigarette smoke on air currents until breathed, vented by air replacement, or removed by purification processes, then sanitary control of ventilation must be guided by bacteriological procedures capable of distinguishing these droplet nuclei.

#### BACTERIOLOGIC PROCEDURES

Procedures developed in half a century of intensive study of dust-borne bacteria and droplet infection were reviewed by the Committee on Standard Methods for the Examination of Air (1917); adequate methods adopted by the Association are still in force: the exposed plate gave the number of bacteria-bearing particles; the filter or washer gave the number of dust-borne bacteria. But dust-borne organisms had already been acquitted by bacteriology; between the acceptance of the final report in 1917 and the description of a new apparatus for study of the bacterial behavior of air in 1933, practically no contributions to this subject appeared in the *American Journal of Public Health*.

Experimental procedures introduced by the new sampling method aroused

immediate interest in air-borne infection and disinfection of air, which led in 1936 to the creation of a subcommittee with the special task of recommending procedures capable of differentiating droplet nuclei infection from dust- or droplet-borne infection. Six progress reports have been submitted (1937-1942) and these were integrated into a consistent system of sanitary air analysis (Wells, 1943). The creation of another subcommittee for evaluating methods of control of air-borne infection indicates the need of routine bacteriological procedures in specifying sanitary ventilation.

Droplet nuclei are characterized by small size of particle—small weight compared to surface area. Air friction clutches the surface of small particles in accordance with Stokes' Law of Viscosity, the essential quality which makes air a vehicle of infection. Except for air viscosity, particles would quickly sediment in accordance with Newton's Law of Gravity. Settling velocity which, according to Stokes' Law, varies with the surface area or the square of particle diameter, governs suspension or flight range of particles; measures air drag which sweeps them into the respiratory tract; and is often correlated with sources of infection. Settling velocity thus becomes the most significant physical determination of air-borne infection relative to pollution and purification of air.

The settling velocity of nuclei of culture broth, atomized into a quiet chamber 8 ft. on a side, has been exhaustively studied by Phelps. Simultaneous plate exposures at different points (Phelps and Buchbinder, 1941) showed uniform density throughout the chamber, enabling computation of settling velocity from successive plate exposures. Bacteria-bearing nuclei, according to these computations, settled 0.03 ft. per min.—the value plotted on Chart 1. Few droplet nuclei would

therefore be deposited in ventilated rooms. So slowly do they settle that their concentration in ventilated atmospheres is determined by rate of addition divided by ventilation rate, rather than upon room activities. As they do not accumulate on surfaces, the dispersion of infected droplet nuclei depends upon the presence within the atmosphere of a person in an infective stage—a characteristic of contagious disease recognized since early times.

Dust deposit depends upon settling velocity; in fact, the ratio of area count (rate of deposit) to volume count (number of bacteria-bearing particles rather than bacteria borne by the particles) defines settling velocity of particles. Values of mean settling velocity of bacteria-bearing particles in various atmospheres as determined by this simple procedure, are tabulated and plotted on Chart 1. Obviously most dust particles settle faster than 1 ft. per min. in ordinary atmospheres. Under conditions of exceptional activity, capable of retaining coarser matter in the air, the average value is greater; under quiet conditions, or where droplet nuclei have been added to the atmosphere (e), the average value may be less. In any case, accumulated dust can be stirred up by activities independent of the presence of an infective person. Resistant organisms in such accumulations, if not removed, are a continual threat of static air-borne infections in contrast to dynamic nuclei contagion. Dust particles, unlike droplet nuclei which readily penetrate to the lung, are more associated with endemic infections of the nose and throat than epidemic phenomena of contagion.

It follows, from the small size of atomized droplets, that seldom would more than one organism be included in a nucleus; this distinguishes droplet nuclei from dust-borne clumps of bacteria. Individual organisms in dust particles, collected in liquids, as by the accepted methods of the Association,

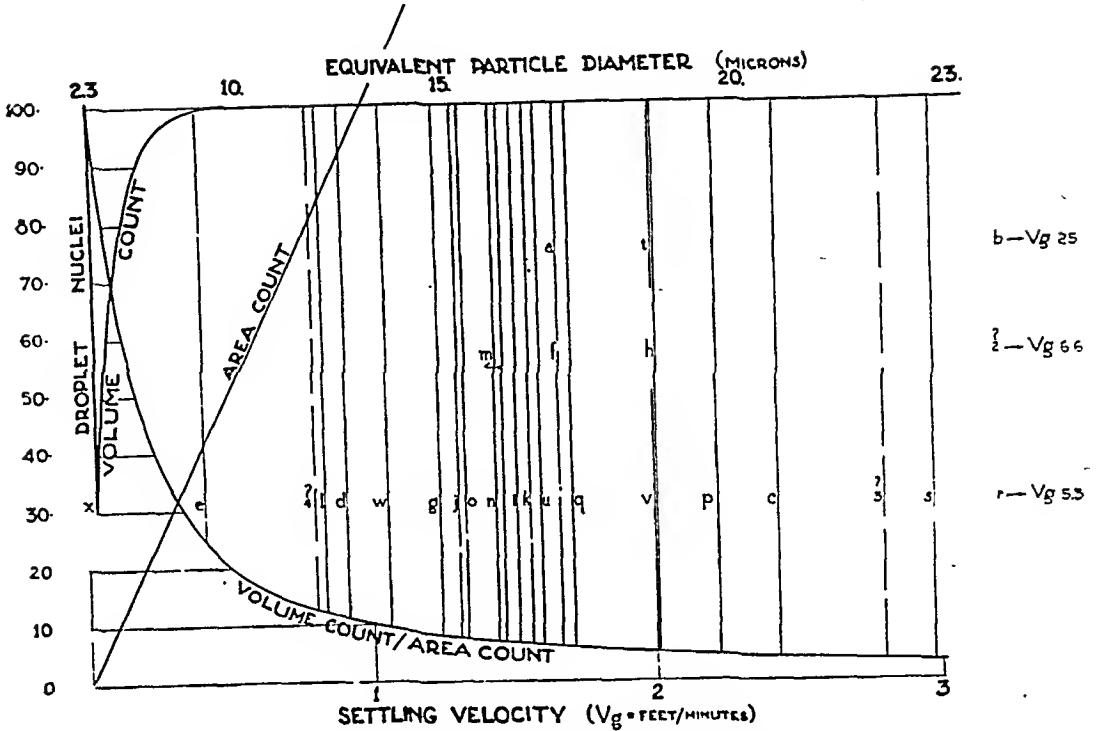


CHART 1. SETTLING VELOCITY of Air-borne Infection,  $V_g = A/D$ , where  $A$  = rate of deposit and  $D$  = density. AREA COUNT = rate of deposit per sq. ft. per min. (15 min. exposure of Petri dish). VOLUME COUNT = air centrifuge count per cu. ft. per density of 100 bacteria-bearing particles per cu. ft. VOLUME COUNT/AREA COUNT is multiplied by ten.

a. Outside air, Near laboratory	1.67
b. " " , Near Textile Mills	25
c. Textile mill air, Dusty (carding, etc.)	2.43
d. " " " , Settled (spinning, etc.)	0.91
e. " " " . Humidified (weaving, etc.)	0.42
f. Hospital air, Clinic (children, Boston)	1.66
g. " " . Cubicle Wards (infants, Philadelphia)	1.14
h. " " , Operating rooms, Boston	2.04
i. " " , " " , Pittsburgh, Air-conditioned	1.56
j. " " , " " , " " , Not air-conditioned	1.32
k. " " , " " , " " , Iowa City, General surgery	1.59
l. " " , " " , " " , " " , Head surgery	0.83
m. " " , " " , " " , " " , Orthopedic surgery	1.47
n. " " . Delivery rooms, Iowa City	1.41
o. " " , Halls, Philadelphia	1.33
p. " " , " , Iowa City	2.22
q. Orphanage air (Philadelphia). Nursery	1.71
r. " " " . Play-room (1-2 year children)	5.26
s. Dormitory, Army barracks used as ward, Morning	2.93
t. " " " " " " , Evening	2.00
u. Schools, Unirradiated	1.6
v. " , Irradiated	2.0
w. Sneeze infected air	1.06
x. Droplet nuclei from atomizer	0.03

Refer to item (2) to (1). a to x given on Table 1 (Wells, 1943).

(a) and (x), anonymous

(w) from Foulden, Litchell, and Lockock, *Brit. M. J.*, 1, 42 (Jan. 10), 1942.

are separated and counted as colonies; whereas a droplet nucleus would probably register merely as a single colony. Thus a large number of bacteria per particle, or total bacteria count divided by the count of bacteria-laden particles, may be a useful index of dustiness rather than infectiousness of air.

These procedures merely characterize dust in routine analysis, for droplet nuclei seldom carry more than a negligible fraction of the total number of air-borne bacteria. Their genesis in the respiratory system, however, gives hygienic significance out of all proportion to their number, and necessitates means for distinguishing them from dust. Generally they contain organisms typical of the nasopharynx—lactose fermenting, Gram-positive, hemolytic streptococci. These organisms grow well on blood agar; but dilution methods analogous to those used for isolation of coliform organisms in drinking water are more sensitive. Air-borne organisms, collected in liquids, are distributed into enrichment broth tubes exactly as in testing drinking water, the presence of acid rather than gas in lactose being presumptive evidence of pollution. Hemolytic organisms are confirmed on blood agar containing enough gentian violet to inhibit staphylococci. The method of enumeration is similar to that applied in water analysis.

The growing recognition of air-borne infection as a basis for a theory of contagion has revived interest in sanitary ventilation. Just as bacteriologic procedures guided the development of water purification practice, so will they evaluate air disinfection processes. The rate of disposal of droplet nuclei infection can be measured by sampling standard suspensions of organisms atomized into air at a constant rate. Ventilation rates are proportional to the equilibrium concentrations, one dieaway rate being determined by successive samplings.

Compared to the amount of pure air replacement required to effect equal removal of the organisms, results express disinfection in terms of equivalent ventilation. To estimate disinfection against pathogenic organisms, relative vulnerability is determined in the laboratory against the standard organism.

Interpretation of the data is also subject to statistical limitations: Single determinations have little significance; fluctuations in occupation load in ventilation are greater than in pollution of drinking water. The hygienic quality of air, as in water, is an abstraction derived from a statistical analysis of a large number of samples obtainable only with a practical routine.

#### SAMPLING

It is generally conceded that, "There is no simple method that is optimal for all circumstances and species, and some degree of compromise is necessary." For our purpose, an air sampler must be capable of concentrating small numbers of nuclei from large volumes of air (a person breathes several cubic feet of air per hour) upon solid culture media or in small volumes of liquid. Phelps, in a careful analysis of the mechanism of deposition in the centrifuge, "operating between 4,000 and 5,000 r.p.m. with an air flow of approximately 1.4 to 1.9 cu. ft. per min.," recovered approximately one-third of the nuclei settling "approximately 22 inches per hour." Substituting this value of centrifuge performance in his equation, or a formula simplified by assumption of turbulent flow (Wells, 1943), gives for rated flow of 1 cu. ft. per min. and density of 100 particles per cu. ft. the "Volume Count" shown on Chart 1. Approximately one-half of these smaller nuclei and practically all particles settling more than 2 in. a minute (probably more representative of nuclei coughed or sneezed into the

atmosphere) would be collected according to this formula.

Complete collection of the smallest bacteria-bearing nuclei, rarely required, can be accomplished by reducing the flow of air or increasing the speed of the centrifuge. The rated flow is a practical compromise between complete recovery of the smallest laboratory nuclei capable of bearing a bacterial cell and the distributed collection of dust-borne bacteria on solid media satisfactory for counting. The settling velocity of droplet nuclei encountered in ventilation practice lies between these values, and their recovery by the centrifuge is practically complete.

A careful study of impingement methods developed for collection of fine industrial dusts (Bourdillon, Lidwell, and Thomas, 1941) has established the necessary velocity of particles of bacterial dimensions (through slits at optimal distances from the agar surface) to be 334 ft. per min.; sampling efficiency falls rapidly at lower velocities—dropping to one-fifth as the velocity falls to one-fourth. The slit sampler, satisfying these conditions, recovered from three to five hundred times as many fine broth spray nuclei from 10 cu. ft. of air as settled on a Petri plate in 10 minutes. The authors conclude, "This range of over 200 to 1 on the slit Petri ratio is very striking proof of the selective action of open dishes when used for collecting bacteria. It is probably safe to say that such dishes are at least 200 times as effective for collecting large bacteria-carrying particles as for single washed air-borne bacteria."

All samplers except the centrifuge require auxiliary equipment to draw measured quantities of air through the instrument. Convenience is important in collecting large numbers of samples, and the convenience of the centrifuge—creating its own measured air flow and depositing both dust and droplet nuclei

directly on solid or in fluid media—recommends it for field use. To obtain uniform results it is necessary to standardize on some method, even if it be acknowledged that no method can be most satisfactory for every purpose. The subcommittee, therefore, tentatively recommends the centrifuge, because of its simplicity, adaptability, and convenience, for practical sanitary air analysis.

#### CULTURE

It is also conceded that, "The efficiency of any sampling method is measurable only in terms of the optimum cultural technique for each bacterial species present and for each variation in the material under test." Most dust organisms are saprophytes which grow well on plain culture media. In determining the count either of bacteria-bearing particles or of total organisms, the subcommittee has adopted media used by the New York State Department of Health in sanitary analysis.

Though nasopharyngeal parasites—specifically hemolytic streptococci of the nose and throat—are more fastidious, they grow well in media containing proteose and tryptose. Blood agar containing these ingredients becomes selective with the addition of 2 p.p.m. of gentian violet, which inhibits most common staphylococci in air; it is hardly necessary to complicate the medium with substances for inhibition of Gram-negative organisms—most of which are short-lived in air. Organisms enriched in proteose-tryptose broth, containing lactose and brom thymol blue to indicate acid production, and also  $1\frac{1}{4}$  p.p.m. of gentian violet to inhibit staphylococci, may be transferred to selective media for confirmation. Tubes showing acid in 24 or 48 hours are streaked on the gentian violet blood agar, hemolytic organisms being further confirmed as Gram-positive.



## SUMMARY OF STANDARD BACTERIOLOGIC PROCEDURES

- I. Density of bacteria-bearing dust particles
  - A. Area count per sq. ft. per min.
    - (a) 15 min. Petri dish count (rough approximation of bacteria-bearing dust particles per cu. ft.).
  - B. Volume count per cu. ft.
    - (a) Slit sampler
    - (b) Air centrifuge, solid media
- II. Settling velocity (ft. per min.)  $V_g = A/B$ 
  - (a) Particle diameter in microns =  $13 \sqrt{V_g}$
- III. Total bacteria per cu. ft.
  - C. Amer. Public Health Assn. methods
    - (a) Washings from filtration
    - (b) Air washers
  - D. Air centrifuge
    - (a) Collection in liquid
- IV. Average number of bacteria per particle =  $C/B$  or  $D/B$
- V. Dust-borne pathogens
  - (a) Beta hemolytic streptococci on blood agar plates
- VI. Median volume per bacteria-bearing droplet nucleus
  - (a) Direct count of alpha hemolytic streptococci on blood agar
  - (b) Median sample volume containing lactose-fermenting hemolytic streptococci by dilution method
- VII. Measurement of sanitary ventilation by sampling at center of room test organisms atomized into four quadrants
  - (a) Dieaway method
  - (b) Equilibrium method

## INTERPRETATION

Information obtained by items I to V characterizes bacteria-bearing dusts; the determination of volume and area counts (by I), and their ratio (by II), determines settling velocity and particle diameter. Coarse dust particles indicate atmospheric turbulence rather than dust accumulation, and the presence of particles with high settling velocity indicates activity in a room; so area and volume samples should be taken simultaneously.

The "total" bacteria per cu. ft. (by III) indicate on the other hand

dust accumulation as well as air disturbance. Bacterial masses in dust fragments from contaminated fabrics, or dirt tracked into the room on shoes, are indicated by high average number of bacteria per particle (IV). Where dust arises from infected persons, clothing, or bedding, as in hospital wards and to a less degree in barracks where men are housed under crowded conditions, dust may have special significance. This index of air dirtiness may be useful in judging the efficiency of dust suppressive measures.

The determination of beta hemolytic streptococci on blood agar plates (by V) has received considerable attention in recent years. Compared with the total number of streptococci determined by dilution methods, beta hemolytic streptococci collected on plates may provide additional information upon sources of infection. Also the epidemiology of air-borne infection, in so far as the clinical pattern is determined by the penetration of particles into the respiratory system, depends upon particle size as indicated by settling velocity.

Breathing droplet nuclei constitutes *prima facie* evidence of the exchange of respiratory organisms—the principal hygienic hazard of confined air. This measurement of occupation load upon ventilation by special techniques is a major task of sanitary air analysis. The test for respiratory organisms (by VII) in breathing air will, as did the test for intestinal organisms in sanitary analysis of drinking water, therefore become the most useful bacteriological procedure in ventilation surveys of public gathering places—movies, schools, department stores, factories, and other places of work and recreation.

Evaluation of methods of control of air-borne contagion will ultimately be based on measurement of sanitary ventilation (by VII) after threshold sanitary ventilation has been established epidemiologically.

# I. PUBLICATIONS OF THE AMERICAN PUBLIC HEALTH ASSOCIATION ON SANITARY AIR ANALYSIS

The Final Report of the Committee on Standard Methods for the Examination of Air. *A.J.P.H.*, 7:54, 1917. C.-E. A. Winslow, *Chairman*, T. R. Crowder, W. P. Mason, E. B. Phelps, G. C. Whipple.

Progress Reports of the Subcommittee on Bacteriologic Procedures in Air Analysis to the Committee on Ventilation and Atmospheric Pollution, 1937 to 1942. W. F. Wells, *Chairman*, E. B. Phelps, E. C. Robertson, C.-E. A. Winslow. *Year Book 1941-1942*, Suppl. *A.J.P.H.*, 32, 3 (Mar.), 1942.

A Bacteriological Method of Sanitary Air Analysis. *Year Book 1936-1937*, Suppl. *A.J.P.H.*, 27, 3 (Mar.), 1937.

Analytic Bacteriological Procedures. *Year Book 1937-1938*, Suppl., *A.J.P.H.*, 28, 2 (Feb.), 1938.

Measuring Sanitary Ventilation. *Year Book 1938-1939*, Suppl., *A.J.P.H.*, 26, 2 (Feb.), 1939.

State of Suspension. *Year Book 1939-1940*, Suppl., *A.J.P.H.*, 30, 2 (Feb.), 1940.

Quantitating Gordon's Bacterial Test for Estimating Pollution of Air. *Year Book 1940-1941*, Suppl., *A.J.P.H.*, 31, 3 (Mar.), 1941.

Bacteriologic Procedures in Air Analysis. *Year Book 1941-1942*, Suppl., *A.J.P.H.*, 32, 3 (Mar.), 1942.

Specific Bacteriologic Procedure. Subcommittee Report submitted. W. F. Wells, *Chairman*, C. T. Butterfield, Martin Frobisher, Jr., F. W. Gilcreas, E. C. Robertson, C.-E. A. Winslow, 1946.

## II. OTHER REFERENCES

Bourdillon, R. B., Lidwell, O. M., and Thomas, J. C. A Slit Sampler for Collecting and Counting Air-borne Bacteria. *J. Hyg.*, 41:197-224, 1941.

Phelps, E. B., and Buchbinder, L. Studies on Micro-organisms in Simulated Room Environments: I. A study of the performance of the Wells air centrifuge and of the settling rates of bacteria through the air. *J. Bact.*, 42:321-344, 1941.

Wells, W. F. Bacteriologic Procedure in Sanitary Air Analysis, with Special Reference to Air Disinfection. *J. Bact.*, 46:549-557, 1943.

Wells, W. F., and Riley, E. C. An Investigation of the Bacterial Contamination of the Air of Textile Mills with Special Reference to the Influence of Artificial Humidification. *J. Indust. Hyg. & Toxicol.*, 19:513-561, 1937.

## New Levels of Professional Compensation Set in Veterans Administration

Public Law 293, now in effect in the United States, creates in the Veterans Administration, Washington, a Department of Medicine and Surgery under a chief medical director. Major General Paul R. Hawley, M.C., U.S.A., has been designated to serve as Chief Medical Director. Professional personnel is set up under the Chief Medical Director in an organization resembling the corps service of the Army, the Navy, and the Public Health Service. General Bradley, the chief of the Veterans Administration, has announced that there is an immediate need for 1,125 physicians, 1,200 nurses, and 100 dentists.

Public health workers will be specially interested in the salary levels set for these clinical specialists. The chief medical director will receive \$12,000, a deputy medical director will receive \$11,500 and eight assistant medical directors will be paid \$11,000 each.

In the medical service the Chief grade carries salaries \$8,750 to \$9,500; Senior

grade \$7,175 to \$8,225; Intermediate grade \$6,230 to \$7,070; and the "Full grade" \$5,180 to \$6,020, with Associate and Junior grades at lower levels.

Appointments of the executives will be for a four year term, subject to removal by the administrator for cause. Specialists certified by the Veterans Administration may be paid a salary up to a limit of \$11,000. Promotions will be made on recommendation of special Veterans Administration boards, which will operate like the selection boards of the Army and Navy for higher ranking officers.

This plan will also involve setting up a series of residencies in Veterans Administration hospitals where younger physicians may qualify to become specialists. It is believed that this will serve to raise substantially the quality of medical care available to veterans and it will be similar to the system now in effect in the larger medical centers.

# Microbiological Examination of Foods\*

## Tentative Methods for the Microbiological Examination of Frozen Foods

### *Food and Nutrition Section*

THE processing and use of frozen food products has increased to large proportions and, with the perfection and availability of freezing and storage facilities, should continue to increase. The following tentative drafts represent methods which have proved workable and, while by no means complete, will form the basis for the perfecting of standard methods for frozen foods. Modifications and improvements will be effected as more experience in this field is gained.

In testing frozen vegetables for microbiological content, consideration must be given to the fact that freezing storage at temperatures of approximately  $-10^{\circ}\text{F.}$  ( $-23^{\circ}\text{C.}$ ) brings about a reduction in viable microorganisms. This may amount to roughly 50 per cent in 6 months or 75 per cent in 1 year. Thus, while a high bacterial plate count on frozen vegetables may be taken as proof of poor sanitary history, a low or moderate count does not by itself prove the opposite.

It is recommended that in the preparation of samples of frozen fruits and vegetables for microbiological analysis a mechanical "blender" be employed. This has been arrived at after considerable experience with various methods of preparation on a wide variety of frozen products. In comparison with washing or hand grinding the mechanical disintegration will, as a rule, yield higher bacterial counts. However, more uniform results will be obtained, and the method is less laborious. Simi-

larly the choice of tryptone glucose extract agar rests on the demonstrated superiority of this medium over nutrient agar or glucose agar, although glucose agar as a medium for frozen peas appears to be only slightly inferior.

#### *Examination of Frozen Vegetables— Selection, transportation, and storage of samples*

Select from the lot to be examined a suitable number of packages, say 3 or 4, from each code lot of the pack. Transport in dry ice to the laboratory for analysis and place the samples in a refrigerated ( $0^{\circ}\text{F.}$ ) storage chest until they are to be analyzed. The temperature preferably should not rise above  $0^{\circ}\text{F.}$  ( $-18^{\circ}\text{C.}$ ) in the handling of the material.

#### *Preparation of Sample:*

*A. Peas, Lima Beans, Cut Corn,  
Whole or Regular Cut Green  
Beans, etc.*

1. *Macroscopic examination*—  
Open the package and note condition of the product, especially if ice crystals are present on the inner walls of the package and the vegetables appear to be somewhat shriveled. This condition is indicative of thawing and subsequent refreezing. Record observations and any abnormalities, such as unnatural color or odor, or pink colonies of torulae which are indicative of improper handling practices.

2. *Sampling for plate counts*—  
The sample, if not loose-frozen, should

\* Report of the Committee on Standard Methods for the Microbiological Examination of Foods.  
COMMITTEE ON MICROBIOLOGICAL EXAMINATION OF FOODS.

Organized 1932. Published reports: *Year Books*, 1935-1936, 1937-1938, 1941-1942, *A.J.P.H.*, June, 1943; August, 1945.

be broken up into small units. This can be done by tapping the unopened package sharply against the table edge or by sharply striking the package with a dull instrument, being careful not to break open the package. After opening the package remove sample with sterile spoon, taking the sample from various parts of the broken out package—e.g., from the center and corners.

A 50 gm. sample is aseptically weighed into a sterile borosilicate glass mechanical blender jar; 450 ml. of sterile water is added to the jar and the contents of the jar blended for 2 minutes. If a Variac transformer is available it is advisable to increase the speed of the motor gradually and then run the blender for the required time at the 110 V. setting of the transformer.

Allow the sample to stand for 2 to 3 minutes to permit foam to subside.

Pipette 1 ml. of the mixture into a 99 ml. sterile water blank. Replace the cap on the dilution bottle and shake the bottle briskly 25 times through a 1 ft. arc.

Pipette 1 ml. aliquots of this mixture into each of two Petri dishes (1:1,000 dilution) and also 0.1 ml. aliquots into each of two more Petri dishes (1:10,000 dilution). A 1:100 dilution may be obtained by pipetting 0.1 ml. aliquots of the original mixture into each of two Petri dishes.

Pour melted tryptone glucose extract agar (pH 7.0) cooled to 45° C. into the Petri dishes immediately, and thoroughly mix the dilution water with the agar by gently rotating the plates in a figure 8 motion with slight tilting of the Petri dish. Cool to harden, invert and incubate at 32° C. for 4 days.

Dilutions of 1:100, 1:1,000, and 1:10,000 will usually suffice for commercially packed frozen vegetables, although further dilutions should be made if the history or the appearance of the samples warrant.

It is of prime importance that the

agar be poured immediately after the inoculum is introduced; otherwise many bacteria will adhere to the glass and an inaccurate count will result.

After the incubation period is complete the plates are counted, using a suitable colony counter. Results are recorded as "Plate count of microorganisms per gram."

3. *Direct microscopic count method*—The direct microscopic method has an advantage over the plate count method in that it is quicker and requires less equipment and glassware. Also it detects dead microorganisms, and indicates sanitary history, irrespective of the viable count.

Weigh 50 gm. of the vegetable (peas, lima beans, and cut corn) into a 250 ml. iodine flask.

Add 100 ml. water, stopper flask, and shake briskly 50 times through a 1 ft. arc. Using a Bréed pipette, transfer 0.01 ml. of the washings to a microscope slide and, using a needle, spread the drop evenly over a 1 sq. cm. area of the slide. Dry and fix with heat or with methyl alcohol. Stain with Gray's double dye stain,<sup>1</sup> or with North aniline oil methylene blue stain,<sup>2</sup> rinse, dry, and examine under the microscope, using oil immersion. Use an ocular micrometer, such as a Whipple disc or Howard disc, with the microscope tube so adjusted that the side of the graduations is equal to 0.1 mm. (area of field 0.01 sq. mm.). Count the cells in 100 fields, and multiply the number by 20,000 to bring to the gram sample basis. Express results as "Direct microscopic estimate, microorganisms per gram."

In the direct method the following assumptions are made. (A) That all the cells are removed from the surface of the vegetable by the washing, (B) that the suspension of bacterial cells is uniform, and (C) that the drop of liquid is evenly spread over 1 sq. cm.

*Interpretation of results* — Plate

counts of more than 400,000 per gram of peas or direct microscopic counts of over 1,000,000 per gram may be considered indicative of poor sanitary conditions in the plant, or poor handling practice in transit or in warehousing. In regard to other frozen vegetables it would appear that counts tend to run higher. In vegetable freezing plants plate counts of over 500,000 per gram of newly frozen produce are not encountered unless there is some degree of carelessness in the plant, such as faulty clean-up practice or prolonged holding of the material after blanching.

#### *B. Frozen Spinach*

For proper comminution of spinach in a "blender" it is necessary to allow the package of spinach partially to defrost by standing at room temperature for 1½ to 2 hours. Open the package and weigh 50 gm. of the contents into a sterile borosilicate mechanical blender jar. Assemble the sample from various portions of the package, taking care to select petiole and blade portions in about the same ratio as in the sample as a whole. Add 450 ml. sterile water. Blend for 2 minutes, and proceed as in analysis of A, peas, lima beans, etc.

#### *C. Frozen Broccoli and Cauliflower*

Allow partially to defrost at room temperature. Using a sterile scalpel, cut portions from the curd and stem of several representative pieces of the vegetable. Aseptically transfer 50 gm. of these portions into the sterile borosilicate glass mechanical blender jars, add 450 ml. sterile water, and proceed as directed for A, frozen peas, etc.

#### *D. Frozen Asparagus*

Partially defrost at room temperature. Cut spears into short lengths, using sterilized scalpel. Transfer aseptically 50 gm. of the segments into a sterile borosilicate glass mechanical blender jar, add 450 ml. sterile water, and proceed as in analysis of A, frozen peas, etc. When weighing out sample portions, a number of spears should be

selected and the proportion of butts and tips maintained.

The "cuts and tips" type of asparagus pack can be weighed directly into the blender cup.

### *Examination of Frozen Fruits*

#### *Preparation of Sample*

Hold the package of frozen fruit at room temperature for 1 to 2 hours before opening in order partially to defrost the contents. While the fruit is still partially frozen, cut portions from various parts of the contents of the package, using a sterilized scalpel. The proportion of fruit to syrup should approximate that of the whole package. Weigh 50 gm. of fruit and syrup into a sterile borosilicate glass mechanical blender jar. Add 450 ml. sterile water, and blend for 2 minutes. Make a 1:1,000 dilution by adding 1 ml. of the blended mixture to 99 ml. sterile water and further dilutions in the usual manner. Plate 1 ml. portions from the various dilutions on tryptone glucose extract agar. Incubate for 3 days at 32° C. Colonies are counted under a suitable colony counter. Record results as "Plate count of microorganisms per gram."

Direct microscopic counts for molds and yeasts are made according to the methods given in *Official Methods*, A.O.A.C.<sup>3</sup> for microscopic analysis of tomato products. Care must be taken to distinguish between mold hyphae and fruit setae.

#### REFERENCES

1. Gray, P. H. II. Two Stain Method for Direct Bacteria Count. *J. Milk Tech.*, 6, 2:76, 1943.
2. North, W. R. Aniline Oil—Methylene Blue Stain for the Direct Microscopic Count of Bacteria in Dried Milk and Dried Eggs. *J. Assoc. Off. Agri. Chem.*, 28, 2:425-427, 1945.
3. *Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists*, 5th Ed., 1940.

HARRY E. GORESLINE, PH.D.,  
*Chairman,*  
U. S. Department of Agriculture,  
Washington, D. C.

M. THOMAS BARTRAM, PH.D.  
JAMES A. BERRY  
EDWIN J. CAMERON, PH.D.  
JOHN L. ETCHHELLS, PH.D.  
MATTHEW E. HIGHLANDS  
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PAUL S. PRICKETT, PH.D.  
JOHN M. SHARP, PH.D.  
OSCAR B. WILLIAMS, PH.D.  
FREDERICK W. FABIAN, PH.D.,  
Consultant

### LETTER TO THE EDITOR

TO THE EDITOR:

I have been told that a set of Journals representing the numbers of the *American Journal of Public Health* published during the war years, which were lost when our Medical Library was burned during the Battle of Manila, are to be given by the American Public Health Association to the Institute of Hygiene at Manila for the use of public health workers in the Philippines.

May I express our gratitude to the Association and to its members for this demonstration of thoughtfulness which is characteristic of the big-hearted way your people act. While I am in this country I want to say on behalf of my colleagues in the Philippines that the donation is very gratefully appreciated.

Sincerely,

HILARIO LARA, M.D., DR.P.H.

*Member Philippine Public Health  
Association and Philippine Medical  
Association; Director, Institute of  
Hygiene, Manila, P. I.*

*(The Association continues to receive copies of the Journal made available by members for other libraries overseas like those in the Philippines. The Association is constantly being reminded of the enormous value which such Journals have in devastated countries.)*

# Selective Service Rejection Statistics and Some of Their Implications

G. ST. J. PERROTT, F.A.P.H.A.

*Division of Public Health Methods, U. S. Public Health Service, Washington, D. C.*

PRESIDENT TRUMAN in his Health Message to Congress on November 19, 1945, reported that the Selective Service System has brought the widespread physical and mental incapacity among the young people of the nation "forcibly to our attention in terms which all of us can understand."

"As of April 1, 1945," the President stated, "nearly 5,000,000 male registrants between the ages of 18 and 37 had been examined and classified as unfit for military service. The number of those rejected for military service was about 30 per cent of those examined. The percentage of rejection was lower in the younger age groups and higher in the higher age groups, reaching as high as 49 per cent for registrants between the ages of 34 and 37. In addition, after actual induction, about a million and a half men had to be discharged from the Army and Navy for physical or mental disability, exclusive of wounds; and an equal number had to be treated in the armed forces for diseases or defects which existed before induction."

These facts are not new, as the President pointed out. Health authorities have been concerned about the serious state of ill health among American youth since late in 1941 when the Selective Service System published its first analysis of the health status of inductees. In this paper it is proposed to discuss the validity of the data as a measure of the prevalence of physical and mental defects and diseases, with

particular reference to changes in prevalence which have occurred since 1918. The data will be examined with a view to estimating the significance of these findings to public health.

Rejection rates must be a first consideration in any evaluation of Selective Service findings. These rates varied greatly during the war. In the first year of Selective Service, registrants were given complete physical examinations by local board physicians. Those who were found to be fit were sent to Army induction stations for final physical examination and, on the basis of this latter examination, were accepted or rejected for military service. Rejection rates for this period (November, 1940, through September, 1941) averaged 52.8 per cent of all men examined. Following Pearl Harbor, a marked reduction was noted. This was probably due to pressure on local boards and induction stations for additional military man power.

By January, 1943, the rates reached an all-time low of 28 per cent. They rose gradually during the year, however, reaching a high of 42 per cent during the last four months of 1943. The increase is attributed mainly to: (1) a higher age average among men examined, and (2) a higher proportion of previously rejected men among examinees as local boards reclassified registrants in an effort to meet their quotas.

The decrease in the rejection rate from 42 to 31 per cent by the end of

the first five months of 1944 resulted largely from two conditions. The average age of men examined was lower than in the previous period, and examination facilities at induction stations were taxed by unusually heavy in-pourings of selectees.

Rejection rates began again to increase by the middle of 1944, progressing steadily from 36 per cent in June to 45 per cent in November. The reasons were: induction for limited service was halted in June; and in the same month psychological tests for mental capacity were modified so that some illiterates, who previously would have been inducted, were rejected. Moreover, during this period greater emphasis was placed on the need for inducting men suitable for combat replacements.

These changing procedures affecting the trend of rejection rates illustrate some of the difficulties involved in evaluating the level of national health in terms of acceptance or rejection for military duty. At any particular period the rejection rates tell only the relative number of individuals who did not qualify according to standards of that period. As has been seen, some of these standards had no relation to physical status.

In discussing rejection rates, Col. Leonard G. Rowntree\* said: "Rejection rates based upon the number of registrants rejected for military service per 1,000 men examined have limitations in their use as criteria of good civilian health. Rejection rates are dependent upon too many factors, as for instance (1) changes in standards of induction, (2) changing deferment policies, (3) varying numbers of registrants by age, race, urban-rural areas, all of which introduce variables correctable only through the calculation

of specific rejection rates, (4) whether a registrant is coming up for the first, second, third, or fourth examination, and (5) how far military standards exceed those required of normal civilian living. Selective Service, therefore, regards the rejection rate per 1,000 men examined as useful in measuring the nation's health only in terms of the limitations placed upon such rates. The incidence of all recorded defects in accepted and rejected men is a better index of the health picture. The latter is only limited in so far as all defects may not be recorded."

In addition to this limitation, however, there are other elements that must be considered in any attempt to arrive at a true evaluation. These include differences in examining techniques at various examination centers, idiosyncrasies of the examining personnel, and the attitudes of the examinees.

A comparison of the reports for November, 1940, through September, 1941, and for April, 1942, through December, 1943, illustrates the effects of these factors on Selective Service findings of the prevalence of disease and disability.

In the first report 1,583.3 defects per 1,000 men examined were recorded; in the second, 1,000.2 defects for each 1,000 examinees. Between the two periods, the coding procedures were changed so that the complete list of defects was not always available in the 1942-1943 data. Since the defects were summarized in order of significance, the limitations of coding would result in the omission of less significant defects and account, at least partly, for the drop in rate.

The effect of such omission and of the other stated factors can be gauged by a comparison of rates for specific kinds of defects. For example, in 1940-1941 when the coding was more complete and when flat feet were a cause for rejection, foot defects, with an average of

\* Chief, Medical Division, National Headquarters, Selective Service System.



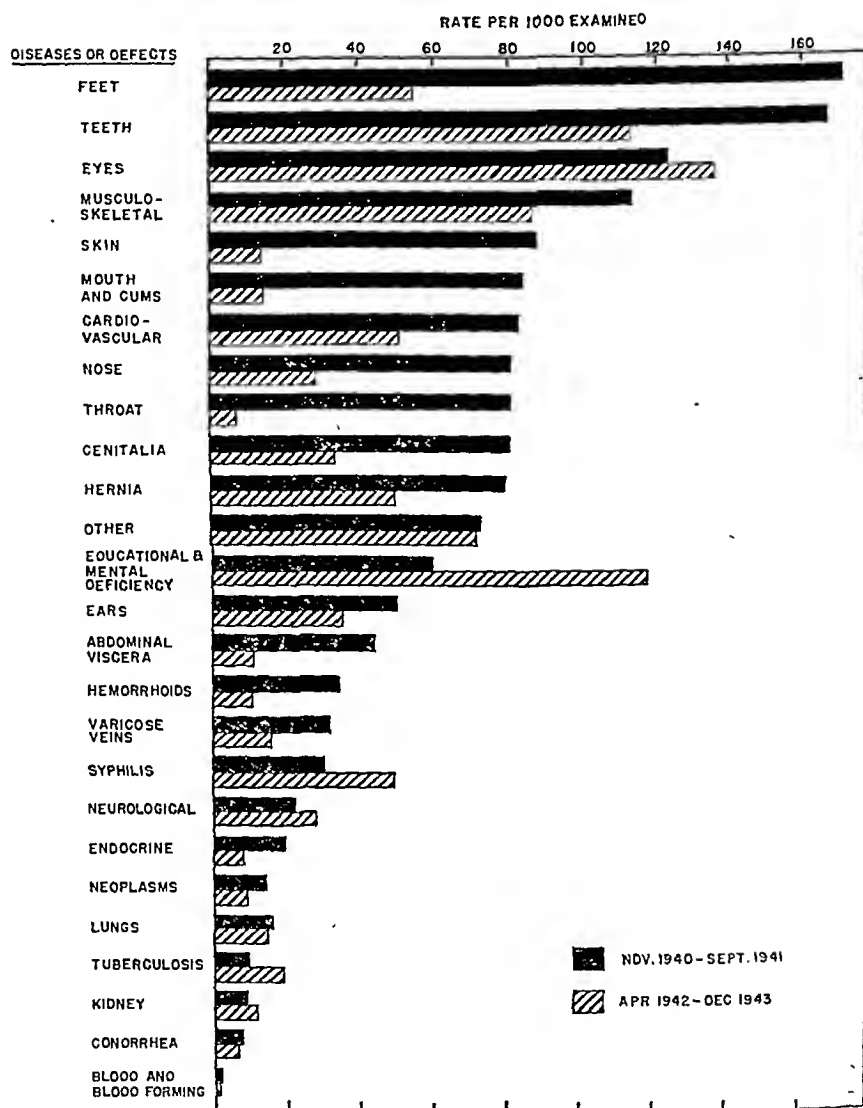


FIGURE 1—Recorded frequency of defects and disease reported among Selective Service registrants examined during November, 1940–September, 1941, and April, 1942–December, 1943

172.4 per 1,000 men, led the list of disabilities. By 1942–1943, however, minor foot ailments were considered unimportant, and reporting on this category fell to 54.6 per 1,000 examinees. Similarly, dental defects—averaging 167.8 per 1,000 men—were second highest among defects listed for 1940–1941. By 1942–1943, the incidence had fallen to 113.0 per 1,000 examinees. This, likely, was due to the failure of ex-

amining personnel to record all cases of carious or missing teeth, or to give dental defects sufficient precedence for inclusion in the coding, since these defects no longer were cause for deferment.

Marked decreases also are found in the prevalence of throat diseases, skin diseases, and defects of the abdominal viscera as the need for more military personnel grew urgent and examining

physicians tended to concentrate on the more serious defects. The relatively minor conditions were included as secondary defects only and thus omitted in the coding.

On the other hand, reports of important defects remained fairly constant in 1942-1943. Eye defects, for example, varied only slightly in the two periods. There also was little change in the reported prevalence of neurological diseases, or of diseases of the lung, kidney, and ear. A large proportion of conditions in these groups of defects were outright causes for rejection; and reporting, necessarily, was fairly complete.

The great increase in the incidence of tuberculosis (9.7 to 19.1) is accounted for largely by a change in examination procedure. Chest x-rays did not become an examination routine until 1942; therefore, it is reasonable to suppose that many cases of tuberculosis among pre-Pearl Harbor inductees passed through examining stations undetected.

The wide variations in reports of educational and mental deficiency recorded for the two periods are easily traceable to different definitions of "educational deficiency" in effect during the two periods. Between November, 1940, and May 15, 1941, regulations stated that registrants were acceptable who "appear to have normal understanding, whose speech can be understood, who have no definite signs of organic disease of the brain, spinal cord or peripheral nerves, and who are otherwise mentally and physically fit." During this period, illiteracy was mentioned in the records of 3.6 registrants per 1,000 examined. On May 15, 1941, however, the standards were raised to require that a registrant should be able to "read and write the English language as well as a student who has completed four years in an American grammar school." These standards re-

mained in force until April 1, 1942. As could be expected, rates for educational and mental deficiency rose in the period.

Mental disease, which was high among the more serious defects in both periods, was found in 67.5 men out of every 1,000 examined in 1942-1943. At the top of the list among these diseases were psychoneurotic disorders, psychopathic personality, and grave mental or personality disorders. Since serious attention was given by examining physicians to evidence of mental disease in both periods, and since the reports for the periods are consistent, it could be concluded that reporting and coding of the incidence of mental disease was fairly accurate.

These comparisons bring out the fact that the order of defects may have been closely associated with prevailing regulations for the rejection or acceptance of examinees for military service. The judgment of the individual examiner in evaluating the relative importance of a series of defects also must be considered as a factor in determining the listing. It is likely, then, that reporting on many defects varied as Selective Service regulations changed; that recording of *secondary defects* tended to be overlooked as coding procedures were simplified, and that the opinion of examining physicians in classifying defects according to relative importance was associated to some degree with military standards.

Review of the figures leaves little doubt that the findings for 1940-1941 more clearly approach the actual prevalence of defects, although how close that approach is can only be guessed. There seems reason to believe that the figures present a fair picture of the prevalence of major defects—with allowances made for variations in examining techniques, in the judgment of examining physicians and in the recording and coding of defects. It also seems obvious that the many factors which

influenced the recognition and recording of secondary defects detract from the accuracy of the reports.

None of the factors which have influenced the reporting and coding, however, obscures the enormous volume of defects. Since all defects—whatever their nature or degree of concern to military authorities—are of importance to the individuals affected, the findings of Selective Service pose a public health problem which must be solved before good health can be achieved for the population.

Too much emphasis is still placed on the decline in mortality as a measure of achievement in health work. Death is by no means the sole measure of the level of national health. To raise the health level, it is essential that increased attention be given to preventing and curing those conditions which cause illness or which reduce the capacity of the individual.

Since the last war the national mortality rate has declined by 3.1 per 1,000 population. Among young men 20 to 34 years, the death rate has gone down nearly 30 per cent. One could feel more complacent if this reduction in mortality were associated with an equal reduction in disability. But such is not the case as comparison of the findings in World War I with those of World War II illustrates.

Reports on the prevalence of defects in the first war show that 661.9 defects were recorded per 1,000 men examined—in contrast to 1,000.2 defects per 1,000 in 1942–1943 and 1,583.3 in 1940–1941. Just as the differences between the 1940–1941 and the 1942–1943 data are due largely to the coding of the diseases, so it must be suspected that failure to record many minor defects in World War I accounts for a major part of the discrepancy in the records of the two wars. In addition, differences in the medical terminology of the two periods make it difficult to determine the

exact classification of defects in many instances. Diagnosis of a number of diseases also underwent refinement in the interval between wars.

As a result, although wide variations in some general groupings will be noted, differences in specific categories, where similarity in terminology permits comparison in the two periods, are not always as great as might be expected. Among diseases of the eye, for instance, 61.0 defects per 1,000 men examined were found in 1917–1918, against 123.5 in 1940–1941. Yet for bilateral and unilateral blindness—an easily defined defect which can be assumed to have been reported in the same category for both wars—the difference is small. Similarly, there is only small variation in recordings of the incidence of trachoma and the slight decrease noted in 1940–1941 may point to some public health accomplishment in the conquest of this disease.

Increased medical knowledge is a factor that cannot be overlooked in comparing the incidence of a number of defects. This is particularly true of asthma, cardiovascular disease, and venereal disease. Since diagnosis of these conditions is much more frequent throughout the population today than twenty years ago, it follows that the incidence among a selected group in 1940 should be greater than in 1917.

Variations in the incidence of tuberculosis are of especial interest since examination procedures in effect in 1940–1941 more closely approximated those of 1917 than in any other period of World War II. Moreover, the decline in incidence rates for the two periods bear fairly close resemblance to the drop in the national tuberculosis mortality rate between 1920 (113.1) and 1940 (45.9). Since the incidence of tuberculosis increased markedly with the inauguration of chest x-rays as an examination routine—moving to 19.1 per 1,000 men in 1942–

TABLE 1

*Prevalence of Certain Recorded Defects Among Drafted Men,  
World War I<sup>1</sup> and World War II<sup>2</sup>*

<i>Diseases or Defects</i>	<i>Rate per 1,000 Men Examined</i>			
	<i>World War I</i>		<i>World War II</i>	
All diseases or defects	661.9 <sup>3</sup>		1,583.3 <sup>3</sup>	
Eyes	61.0 <sup>3</sup>		123.5 <sup>3</sup>	
Blindness, bilateral and unilateral		7.5		6.5
Trachoma		1.2		0.5
Defective vision		46.3		83.3
Ears	15.4 <sup>3</sup>		50.1 <sup>3</sup>	
Defective hearing		7.1		9.4
Otitis media		7.3		8.3
Asthma	2.3		5.4	
Hypertrophic tonsillitis	33.8		44.1	
Tuberculosis (all forms)	24.7		9.7	
Cardiovascular	50.2 <sup>3</sup>		83.1 <sup>3</sup>	
Valvular diseases of the heart		29.6		12.7
Cardiac hypertrophy		4.2		2.8
Tachycardia		5.0		6.7
Hernia and inguinal rings	55.4		79.7 <sup>3</sup>	
Hernia		27.6		34.8
Enlarged rings		27.8		34.4
Venereal diseases	46.7		38.1	
Gonorrhea		36.0		7.1
Syphilis		9.5		30.8
Chancroid		1.2		0.2
Varicose veins and varicocele	8.8		32.1	
Mental deficiency		12.2		15.3
Epilepsy		3.9		3.7
Mental alienation		3.8		16.3
Crippled or paralyzed members		48.7		76.8
Lost members:				
Upper extremities				
Fingers		7.6		7.1
Other		1.6		1.5
Lower extremities		4.6		3.6
Flat feet		104.4		162.0
Curvature of the spine		7.7		15.0

<sup>1</sup> From Table 4 in Britten, R. H., and Perrett, G. St. J., Summary of physical findings on men drafted in the world war. *Pub. Health Rep.*, 56:41-62, 1941.

<sup>2</sup> From Table 7 in Selective Service System, Causes of rejection and incidence of defects. *Med. Stat. Bull.* No. 2 (Aug. 1), 1943.

<sup>3</sup> The sum of the rates for specific categories of defects does not always add to the rate for the general category because of the omission of specific categories not comparable to the two periods: World War I and World War II.

1943—it seems evident that (1) considerable tuberculosis went undiscovered in 1917-1918, and (2) that the incidence of the disease actually was lower in 1940 than twenty years previously.

Loss of members is an obvious defect that cannot be influenced by any of the elements affecting reporting or diagnostic procedures; therefore, these figures can be accepted at face value. The great similarity in rates for this type of defect, as well as for others which are easily observed, leads to the con-

clusion that the prevalence of a number of defects in 1917 was probably about the same as in 1940-1941.

Certainly, evidence of great improvement is not reflected in the comparison. While slight decreases may be indicated in the incidence of a few defects and diseases over the twenty year period, they are too small to be proof of progress. Examination of the findings of World War I and World War II, then, seems to attest to the conclusion that the health level of the American people

has not improved in the same degree as mortality for at least two decades.

The central fact remains that the findings of both wars show an enormous amount of ill health in the population.

During and after the first World War, draft data were reviewed, analyzed, and interpreted. Over the ensuing years, medical statisticians decried the low level of health among the nation's young men and viewed the situation with alarm. It is regrettable that the papers produced by these statisticians represent the sole use to which the findings of World War I were put.

Now, once more, protests are being raised against the health level—this time based on the amount of defects found among the sons of World War I examinees. It is to be hoped that the implications of these latest wartime health reports will be regarded as an index of the degree of actual need and will be utilized in planning health services which must be supplied to bring to oncoming generations the benefits of knowledge already at hand.

Reports of defects found among young men examined for military duty in World War II can serve as signposts to health authorities in plotting future activity. Much of the past achievement in public health has been due to the application by health departments of epidemiological case finding techniques to the control of disease spread. Selective Service data make available a new source of information for evaluating the relative extent of particular physical and mental defects.

The President in his recommendations to the Congress for the establishment of a National Health Program has used the reports on medical examinations of selectees to gauge the total health needs of the country. Nation-wide programs for the prevention and cure of tuber-

culosis, venereal diseases, and other communicable diseases are now authorized by the Congress. State and local health authorities can use Selective Service findings to ascertain where existing programs should be strengthened and what additional services are required. In the past, health authorities have turned to mortality rates as a major index for determining problems of public health significance. The limitations of these rates in evaluating health needs have been recognized. Knowledge provided by mortality statistics is confined to deaths resulting from specific diseases. A well organized attack on the whole health front requires comprehensive and current information on the prevalence of disease and defects—in short, complete morbidity reporting in every state. In lieu of this, Selective Service data, while not so accurate, offer an immediate and potent source of information on the prevalence of those defects which it is within the province of public health to prevent or remedy.

#### REFERENCES

1. Britten, R. H., and Perrott, G. St. J. Summary of Physical Findings on Men Drafted in the World War. *Pub. Health Rep.*, Vol. 56 (Jan.), 1941.
2. Lew, E. A. Interpreting the Statistics of Medical Examinations of Selectees. *J. Am. Statis. A.*, 39:345-356, 1944.
3. Message from the President of the United States. National Health Program, November 19, 1945. *H.R. Document No. 380*.
4. Office of the Surgeon General. Induction Examinations. *Bull., U. S. Army Med. Dept.*, 87:54-60, 1945.
5. Perrott, G. St. J. Findings of Selective Service Examinations. *Milbank Mem. Fund Quart.*, Vol. XXII, 1944.
6. Rowntree, Col. L. G. Testimony before Subcommittee of the U. S. Senate Committee on Education and Labor, Seventy-eighth Congress, 2nd Session, July, 1944.
7. Selective Service System. Causes of Rejection and the Incidence of Defects. *Med. Stat. Bull.* No. 2, 1943.
8. Selective Service System. Physical Examinations of Selective Service Registrants During Wartime. *Med. Stat. Bull.* No. 3, 1944.

# Chronic Disease: A Problem That Must Be Faced\*

EDWARD S. ROGERS, M.D., F.A.P.H.A.

*Assistant Commissioner for Medical Administration, New York State Department of Health, and Director of Planning for the Care of the Chronically Ill, New York State Health Preparedness Commission, Albany, N. Y.*

THERE are few major problems in the field of medical and social need about which there is more universal agreement and, yet, about which less actually is being done than that of the care of the chronically ill.

The fact that this need has existed so long and that the deplorable lack of adequate facilities for the care of the chronically ill has not evoked more attention may be explained, in part, by the gradual shift in our pattern of domestic life from that of a predominantly rural population in which we were inclined and able to take care of our needs in our own homes to that of urbanization, industrialization, and crowded housing; in part, by the steady increase in the age of our population resulting in increasing opportunity for the development of the so-called degenerative diseases and other diseases associated with age, such as cancer; and, in part, by the unfortunate fact that the chronically ill are, generally speaking, unable to organize so as to bring about the fulfillment of their needs. There are, of course, other factors involved; these are merely illustrative.

As might be expected under the circumstances, the efforts of communities to meet this growing problem have

resulted in developments on a more or less haphazard pattern.

Today we are approaching an era of medical social enlightenment when, perhaps for the first time, we may expect to see the meeting of minds and unification of purpose necessary to an integrated approach to this complex problem. There are abundant signs: the broadening of our social security provisions, the increasing concern for all of the basic needs of our population, and the new understanding of the social forces in illness and disease and concepts for their prevention.

The undesirable conditions being called to our attention at the present time, exemplified in the very inadequate facilities for the care of the chronically ill in many county home infirmaries and nursing homes, do not necessarily constitute a condemnation of our social system if understood in the light of their origin, but they would constitute a condemnation of it were they allowed to continue. In some areas steps actually have been undertaken to meet these needs, but, generally speaking, these steps have been restricted to specific communities and groups where rather specialized circumstances obtain or to only a few of the essential phases of a complete program. They do not provide us with the complete pattern or the means for answering the total needs of the chronically ill, be they

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rich or poor, urban or rural, young or old, or of one religion or another.

For planning purposes, some sort of a definition of chronic illness seems to be required. Certainly definition is essential for understanding the significance and comparability of the limited data available. For example, the National Health Survey<sup>1</sup> defines chronic disease as "a disabling or non-disabling chronic pathological condition known to the informant, the symptoms of which had been recognized for at least three months." There are obvious flaws in this definition. A patient with newly recognized and diagnosed diabetes or rheumatic heart disease would not be eligible for inclusion under this definition until three months had elapsed. But, for practical purposes, it is difficult to make a definition that does not have flaws.

When it is estimated, on the basis of the National Health Survey,<sup>2</sup> that 25 million persons, or one in every five persons in this country, has a chronic disease, we are not particularly impressed for we know that many of us are included in this group but that we get around somehow in spite of it. When we learn that it is estimated that over 1.5 million persons are permanently disabled from chronic diseases (exclusive of those confined to long-term care in mental or tuberculosis hospitals), that almost one billion days each year are lost from work or other usual pursuit because of chronic illness, and that more than three-quarters of the chronic disease cases are among persons in the productive years from 15 to 64,<sup>1</sup> we are undoubtedly more impressed—but still not moved to action.

But there are other ways of learning that there is a problem and what the nature of the problem is. Visits to the wards of a few large general hospitals, conferences with social workers who are desperately trying to find places for the chronically ill, visits to county

homes, talks with welfare officers, with public health nurses, or with almost any physician, are more substantially convincing of this unmet need than cold figures that are so difficult of interpretation.

There is no intention to detract from the importance of studies and surveys. They have a most essential rôle. Significant and excellent studies have been made nationally as mentioned<sup>1</sup>; locally, such as the studies of Boas<sup>3</sup> and Jarrett<sup>4</sup> in New York City, and of Jarrett<sup>5</sup> in Cleveland; at the state level, such as the study of Bigelow and Lombard in Massachusetts in 1929-1931,<sup>6</sup> the 1944 report of the Public Welfare Council of Connecticut,<sup>7</sup> the report in 1932 of the New Jersey Department of Institutions and Agencies<sup>8</sup>; and there are undoubtedly others. These constitute valuable documentation of the need and undoubtedly have given and are continuing to give important support to public action. It is doubtful, however, that they can determine it.

The point that should be made is this: those of us who are faced with the problem of doing something for the chronically ill today probably would be poorly advised to start with a survey to determine the specific character and extent of chronic disease in our respective areas. There would be danger of getting "bogged down" in a time consuming project which really would not add much to what has already been demonstrated adequately. Certain fundamental services for the chronically ill are obvious and beyond question as to their value and need. It would seem, therefore, to be good sense to start with them and to provide them. At first, this should be done in a small way, well within the limits of what is known to be needed. Step by step thereafter, further progress should be made as needs and relationships define themselves. The end result will be:

first, that something will be done to meet this need—and a few enlightened places are already ahead of most of us in this respect—and second, that we shall finally accomplish a program that is thoroughly practical and thoroughly consistent with other related programs and services. In other words, the question resolves itself into one of the fundamentals of program planning and development.

First, the objectives must be established. What areas and what groups of the population are to be covered? Generally speaking, it would seem that this is a proper field for state-wide action. The inadequacies in existing facilities for the care of the chronically ill are about as great for those of modest means, or even the well-to-do, as they are for the poor. The planning for facilities and services of high standard should embrace the needs of everybody. The question of paying for them can and should be dealt with separately. In this latter connection, the potential economic relief that may be achieved from medical care insurance should not be confused with the equally great need for an improved distribution of facilities and services and the maintenance of their quality. Insurance *per se* will make little contribution to either of these.

If the matter of definition cannot be avoided, and it probably cannot, an attempt should be made to make it as flexible as possible. Actually, not everyone with a chronic illness is ill in a functional sense; and, while it might be a fine thing to have each one registered and under medical observation, such certainly should not be an early objective of a program.

Therefore, an administrative definition of chronic disease suggests itself as follows: A disease that may be expected to require an extended period of medical supervision and/or hospital, institutional, nursing, or supervisory

care. Such a definition would be utterly useless in obtaining prevalence data; yet it embraces the problem in terms of services needed, and it is with these that we are primarily concerned. It is, indirectly, a functional classification. If a functional classification were possible in all categories of chronic disease, such as that prepared by the Criteria Committee of the New York Heart Association for the classification of heart disease, chronic disease morbidity data would acquire a new meaning.

Second—and this point cannot be emphasized too strongly—planning for the care of the chronically ill should be considered as a most important segment of, and in no way separable from, planning for medical, preventive, and health service as a whole.

There is a strong tendency to approach the problem from a traditional point of view and to consider it a matter of public assistance. It has very real public assistance aspects. These must be fully recognized; but it would be most unrealistic today to undertake to develop divided medical and health services for this or any other area of medical need on the basis of whether the patients themselves are to pay for service, or whether someone else is to pay for them. The medical and health needs of the poor, the near-poor, the well-to-do, the civilian and the veteran, the laborer and the farmer are quantitatively and qualitatively one entity; and good planning will recognize them as such. As has been pointed out already, this principle bears no obligation to the controversial problem of who is going to pay for the service. It bears a distinct obligation, however, to the problem of administrative structure.

Also, there is a tendency to approach the problem of chronic illness as though it were medically isolated—one that indicates the construction of distinct institutions for the care of the chronically ill—much as was done for the



care of the tuberculous and the mentally ill. Yet, many authorities in these two fields are now openly critical of their earlier judgment and see their problems as specialized parts of, but not remote from, those of medical and hospital care as a whole.

In the light of the current emphasis on the construction of coördinated hospital and health center facilities and the very real prospect of national and state legislation and planning, it certainly is urgent that the needs of the chronically ill be kept in mind. It is equally urgent that those planning for the care of the chronically ill, if they happen to be a jump ahead of the state master plan, make their plans adaptable to the fundamental future pattern.

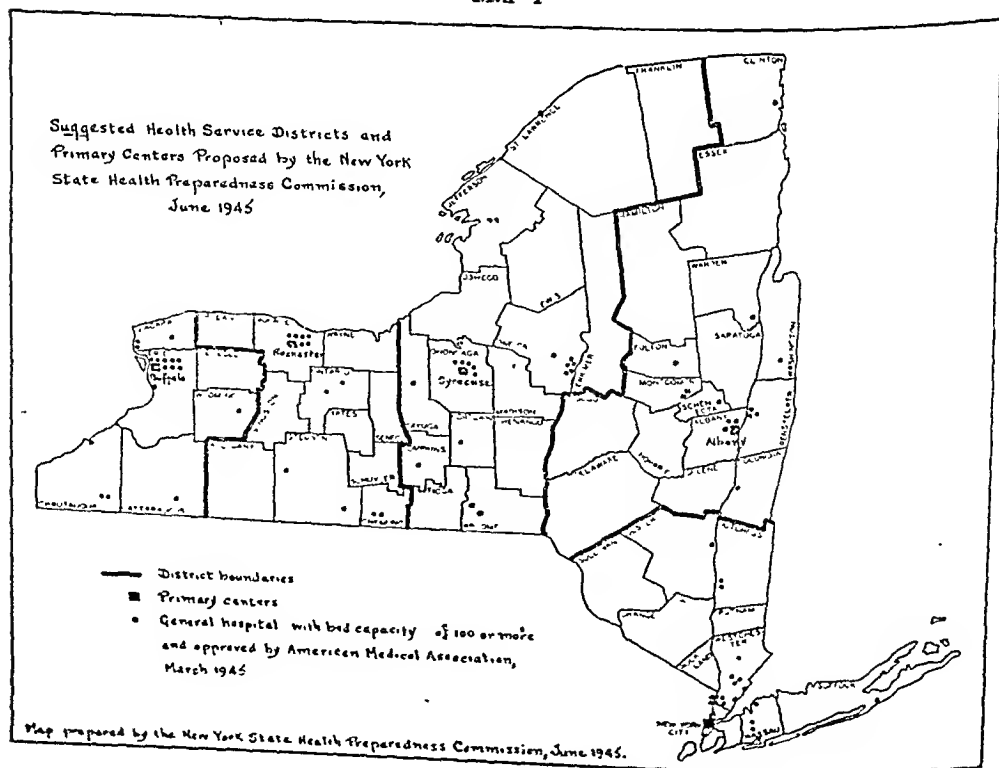
Because we felt so strongly about this and believed that a plan for the care of the chronically ill in New York

State\* should be fully adapted to a long-range plan for all services, our first attention was given to a study of logical grouping and regionalization of medical services as a whole.<sup>9</sup> We have defined five natural, primary medical centers in New York State and tentatively visualized the areas which they most logically would serve (Map 1). Also, entirely tentatively, we have indicated the possible localization of so-called secondary medical centers which correspond to the district hospitals in the plan devised by the U. S. Public Health Service and presented in the so-called "interim report of the Pepper Committee" in January 1945.<sup>10</sup>

The fundamentals of this general plan for the integration of hospital and health facilities in a qualitative relationship are well known. It has stood

\* Reference is to the Plan for the Care of the Chronically Ill being developed by the New York State Health Preparedness Commission.

MAP 1



the test of a good deal of thinking and discussion as well as a certain amount of practical demonstration, and it should be kept in mind in planning for the care of the chronically ill no less than in the planning of any other medical and health service.

With the recent appointment by Governor Dewey of a Joint Hospital Board for New York State, which is to conduct a survey and develop a state-wide plan for hospital and health center facilities, our planning group has turned over this phase of its work to the new board and we shall look to them for further guidance. The essential point is that we shall integrate our plans with theirs. Similarly, the value of and need for such integrated planning must be impressed upon all communities of the state in order to assure as much lasting benefit as possible from the post-war hospital, county home, and other institutional construction mania that have seized upon us.

Third, the general character of the services required must be agreed upon. There are different levels of need in relation to the care of the chronically ill, and not all of them can be handled in an identical manner. Three levels have been suggested by Boas<sup>11</sup> as follows:

1. Diagnosis and treatment
2. Skilled nursing care
3. Custodial care or home care

It would be extremely difficult to predict the distribution of the chronic disease case load among these three levels of service for any given community. There is bound to be considerable overlapping. For example, patients in nursing institutions or county infirmaries unquestionably will shift in medical status and will require more intensive care in the hospital for short periods. On the other hand, some may improve and require no nursing supervision. Hence, provision must be made for reasonable interchange.

and prediction of the case load would be difficult unless precise criteria first could be established for the admission or transfer of patients from one category of care to another. It seems quite obvious that this could not be done arbitrarily and, if done at all, should be sensitive to variations in the local situation that relate to it.

It is hard to decide just what type of hospital facilities are most needed. One point is certainly clear, however, and that is that under present conditions there are not sufficient beds for the hospital care of the chronically ill, and general hospitals do not like to take or keep them.

Without any intention of being dogmatic about a subject concerning which there undoubtedly is room for argument, the following suggestions, which seem to have much in common with the recommendations of Bluestone,<sup>12</sup> are set forth as seeming to be desirable:

1. The chronic disease hospital, as distinct from a nursing or custodial institution, should be located in a medical center offering all essential diagnostic skills and facilities.

2. The chronic disease hospital should be an integral part of a general hospital, physically close to it, but administratively reasonably independent. There should be complete identity of medical staff and interchange of resident physicians.

3. The chronic disease hospital should offer services and facilities of very high quality to everybody requiring such. The basic standards should be determined, in the first instance, by the State, and, beyond that, through such additional requirements as local circumstances shall permit and as shall be determined locally.

4. In general, patients should be kept in the chronic disease hospital for relatively short periods for the purpose of diagnosis and intensive therapy, or for longer periods of time if desirable for study, research, or rehabilitation.

5. The second level of care should be provided in decentralized institutions conducted as nursing homes or infirmaries. These should have sections for custodial care, or be closely associated with units operated for custodial care. It would be difficult to separate these two levels completely because of

the shifting of many patients back and forth between them. Moreover, the current pattern for administration of both levels, usually under the welfare departments, is deep-seated and there would seem to be no reason for changing this unless it should prove unworkable.

It hardly need be pointed out that, with respect to technical interest and skilled supervision and care, the chronically ill will nearly always suffer in contrast to the acutely ill when they are side by side in the hospital. The acute problem is more dramatic; it moves faster; it demands and gets more attention from physician, intern, nurse, and student alike. Yet there is no reason why chronic disease should not be made technically interesting. In fact, it must be if we are to attract people to research in this field and provide essential teaching material with a view to preparing the doctor of tomorrow to carry on with his work. Remember that an increasing amount of his work must be in the field of geriatrics.

The outstanding lacking requisite for obtaining interest in chronic disease that is comparable to that in acute disease, would appear to be the provision of a sufficient volume of material. Just as long as the chronically ill are scattered here and there among general hospital cases, their individuality as an intriguing medical problem will be lost. If they are properly grouped in large enough numbers to compensate for the slow motion of the individual case, a field of great clinical and research importance and interest should result. It should be followed by better care, improved methods and knowledge, and a better and more keenly interested medical profession.

At the second level of care, that is, nursing homes and infirmaries, there would seem to be equally great need for new thinking. Generally speaking, the medical and nursing standards in nursing homes, county homes, and poor

farm infirmaries are inadequate. In fact, it is no exaggeration to say that they frequently have been found to be little short of disgraceful vestiges of a much less enlightened time. These problems have been fully discussed and remedies suggested by authorities such as Potter<sup>13, 14</sup> and Jarrett.<sup>4</sup>

Medically these institutions have a service to perform in providing facilities for the supervision or nursing care of those who do not require the more costly facilities of the chronic disease hospital. The medical services for such nursing homes, infirmaries, and units should be provided through affiliation with the staff of a secondary hospital center or, where that is not feasible, with the highest qualitative level of service that is available. In a proper functioning of the anticipated relationship between the primary, secondary, and outlying medical units there should be active interchange, consultation, and maintenance of standards by the medical staff itself, with the official state agency remaining largely in the background.

There would be much to be gained if these local institutions, for which the title "nursing infirmaries" suggests itself, could be so developed and operated that they could serve the needs of all classes of the population. The fact that most of them are run by the local welfare departments need not preclude this possibility. Potentially paying patients could pay, though application of the means test should be humanitarian. It is the provision of facilities and the assurance of high standards of care for everyone that are important at this time.

Also, there is no reason why private nursing homes should not be utilized, provided, of course, they meet standards of facility and staff. Generally speaking, however, these units are too small to provide the necessary services without unreasonable cost.

In addition to institutional facilities, a complete plan for the care of the chronically ill should embrace provision for diagnostic and consultation clinic services and follow-up clinics for ambulatory patients who do not require institutional care. There also should be the fullest possible integration of such services with public health nursing services and other local health and welfare activities. Such integration cannot be left to chance but should be included in the substance of the program.

Since this is a public health conference, it probably is unnecessary to emphasize the significance of public health measures and the preventive medical approach to the lessening of the burdens of chronic disease. Certainly if there is any merit in preventive medicine as a concept, it should find a fertile field in the problems of chronic illness.

The problems of financing the construction and operation of the proposed facilities are also complex and the patterns currently in use vary greatly. Pending state and federal legislation may or may not change the entire picture. But regardless of what may emerge, the problems of integration, organization, and administration that have been mentioned will remain to be worked out.

If new legislation sweeps aside the problem of cost, we should be able to move that much more rapidly toward meeting this area of need. If it does not, we shall be faced with the difficulties of working within our current basic structure. Should the latter result, it is important to point out that the federal and many state laws for aid to localities in meeting their public assistance expenses may actually militate against the provision of the best quality care. For example, under the existing provisions, it may prove far more economical for a county to place

its chronically ill in second-rate nursing homes, which are virtually unsupervised, in order to receive substantial reimbursement through federal and state funds, than it would be for it to care for these patients in good hospitals and infirmaries for which it can receive no financial aid.

While this problem may be a bit beyond the province of this discussion, it should be pointed out that a thorough review of federal and state legislation in these respects is most urgently needed.

The provision of the necessary facilities and services admittedly will be expensive. The question may well be raised, however, as to whether it might not prove more expensive to neglect the study and development of means for preventing chronic disease, or at least minimizing the periods of disability resulting from it, than it would be not to do so. This question would seem to be destined to be the increasing concern of government under an expanding social security system. A billion days of disability and unemployment a year will not be cheap! Furthermore, with an aging population, future production may have to depend more upon a sustained working capacity among older persons than is the case today.

In conclusion, it would seem that the time for facing the problem of the care of the chronically ill has come and, while it admittedly is difficult of solution, we are better equipped to meet it in terms of public interest, in understanding of our needs, and in the potentialities for the necessary coordinated action between official and non-official agencies and groups than we have been heretofore.

It is a problem involving the necessity for joint planning among welfare, health, medical, and hospital agencies. Such joint planning should result in the enunciation of a clear set of objectives

and in understanding and agreement with respect to the responsibilities of each. Finally, the fact that the care of the chronically ill is merely a part, albeit a large part, of the problem of medical care and health as a whole must be kept in mind so that such patterns as are developed may be consistent with the further evolution of good medical and health services.

REFERENCES

1. Perrott, George St. J. The Problem of Chronic Disease, *Psychosomatic Medicine*, VII, 1 (Jan.), 1945.

2. The Magnitude of the Chronic Disease Problem in the United States, The National Health Survey, Preliminary Reports, *Sickness and Medical Care Series Bull.* 6..

3. Boas, Ernst P. The Unseen Plague Chronic Disease. J. J. Augustin (1940)

4. Jarrett, Mary C. *Chronic Illness in New York City*. Columbia University Press, 1933.

5 Jarrett, Mary C. *Care of the Chronically Ill of Cleveland and Cuyahogo County*. Benjamin Rose Institute, 1944.

6. Bigelow, George H., and Lombard, Herbert L. *Cancer and Other Chronic Patients in Massachusetts*. Houghton Mifflin Co., 1933.

7. Need for a State Infirmary for the Care and Treatment of Aged, Infirm, and Chronically Ill Persons. *A report to the 1945 General Assembly by the Public Welfare Council*, Hartford, Conn., 1944.

8. *Report on Chronic Disease in New Jersey*. State of New Jersey Department of Institutions and Agencies, 1932.

9. Unpublished 1944-45 report of the New York State Health Preparedness Commission. (Report for publication in preparation).

10. Interim report from the subcommittee on Wartime Health and Education to the Committee on Education and Labor, U. S. Senate, pursuant to S. Res. 74. *Subcommittee Report No. 3*, Jan., 1945.

11. Boas, Ernst P. A Community Program for the Care of the Chronic Sick. *Hospitals*, 10:18 (Feb.), 1936.

12. Bluestone, E. M. Chronic Disease—A Problem in Philanthropy. *Bull. Am. Hosp. A.*, July, 1935.

13. Potter, Ellen C., Howell, Laura, and Lockwood, Marion. Inspection and the Power of License as Tools in the Care of the Chronically Ill. *Public Welfare*, Apr., 1944.

14. Potter, Ellen C., Howell, Laura, Lockwood, Marion, Dowdell, Marc. How Can a Program for the Care of the Chronically Ill and Aged be Integrated? *Public Welfare*, Nov. and Dec., 1943.

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# In-service Training in a State Department of Health

FELIX J. UNDERWOOD, M.D., F.A.P.H.A.

*Executive Officer, Mississippi State Board of Health, Jackson, Miss.*

EDUCATION goes on and on. It is a never-ending process starting from the day of birth and continuing until death. The better it "takes" the more flexible an individual becomes and the greater his benefit from each of his experiences. A few rare souls go through life with an ever-sharpening sense of expectancy, an ever-ripening wisdom, and an ever-increasing understanding. In some mysterious way they manage to keep their feet on the ground and their heads in the clouds. The truth is they are forever educating themselves, making the most of each experience, developing things, working them out, and getting enjoyment, philosophy, and satisfaction from the process.

One educator remarked many years ago, "Our educational efforts are sadly disappointing except when applied to those gifted individuals for whom they are almost superfluous." This point of view leans to the pessimistic side. But it points up the first step in any program of in-service training—careful and considered selection of personnel. Many of our great souls in public health had no formal training. They established the principles by which public health activities are being pushed forward today. These were pioneers, it is true, but there is still room for pioneering in public health. The field has not yet crystallized to such an extent that initiative and enterprise are not needed! May it never be!

It is hard to polish a stone. Recruitment of public health officers, nurses, engineers, sanitarians, clerks, dental hygienists, and health educators is worthy of the best thought and time in any state that the person assigned to do this job in each of these fields can give. Aside from the fact that employment difficulties are decreasing, an admonition to pick carefully still is significant. In certain counties in the country where a well trained health officer joined the military forces, public health might be further along today if he had not been replaced at all, because of the incompetence of his successor. The same is true for some other public health personnel. Programs in these counties have not progressed. Public opinion about the value of preventive medicine may have retrograded.

The war has pointed up the tragedy of improper selection of personnel. But if it has taught us lessons of what cannot be done with people who are improperly recruited, it has brought home forcefully a greater lesson of the flexibility and teachableness of people sincerely motivated to serve their community and fellow man. It has also emphasized the value of job analysis, better direction of professional effort and the use of less skilled people to take over the routine aspects of public health administration, nursing, sanitation, and other work.

In-service training of public health personnel may include any learning ex-

perience of a public health employee, varying from the visit of an advisory consultant to one or more years of long-term public health or related graduate work. It may include attendance at a two day institute for sanitarians on safe methods of spraying DDT, for nurses on techniques in the control of gonorrhea, or for health educators on methods of organizing for mass x-raying of 95 per cent of a county's population. In-service training accrues also to the convention delegate.

Short medical graduate courses in obstetrics, pediatrics, and syphilis offer in-service training to the practising physicians who conduct health department conferences. The visit of a nutritionist to a staff meeting in a county health department with the latest information is in-service training. The young statistical clerk who has an opportunity to go for the first time to the big city and learn about tabulating machines is having a learning experience of real value. The ambitious secretary who takes advantage of a night-school course in stencil cutting and mimeoscoping, journalism, or psychology is improving her personal and financial worth to the organization for which she works.

In-service training includes opportunities for local and state staffs to visit other health departments, observe procedures in other counties and states, and to return with new enthusiasm and ideas to the job at home. Training center apprenticeship for anywhere from a few days to a few months with formal classes and field experience is part of in-service training, as are short courses in public health and related fields at schools of public health and universities. Long courses in public health and all of its specialized branches, including not only communicable diseases, maternal and child health, statistics, sanitation, bacteriology, nutrition, and mental hygiene, but also business man-

agement, economics, sociology, and administration, are part of in-service training. In-service training is a big thing. In-service training is many little things.

In Mississippi all of these methods of in-service training are known, valued, and used. One of the important factors in personnel training in Mississippi has been the development of a training center at the Lauderdale County Health Department. This center is partially financed by the Commonwealth Fund in the interest of better public health personnel in Mississippi. On October 1, 1939, the school opened with organized courses of three months in practical public health for health officers and nurses.

Courses for sanitation supervisors got under way in July, 1941. The clerical training program started in January, 1943, and organized venereal disease investigator courses in recent months. At present classes are conducted for clerical workers and venereal disease investigators only. Resumption of formal training for health officers, public health nurses, and sanitation supervisors is mandatory, with a priority claim on the excellent staff members coming back from military service.

From October 1, 1939, to June 30, 1943, 40 physicians, 84 nurses, and 18 sanitation supervisors received training at the Lauderdale County Center.

Nurse training was under the direction of the supervisor and assistant supervisor of nurses. One to six trainees at a time were given training, and carried on a program of classes and planned field work. Each trainee was assigned to a staff nurse. She had her desk adjacent to that of the staff nurse and she and the staff nurse worked together in the office and in the field during the first two months of training. During the last month the trainee was given more responsibility and allowed to work alone, though with guidance.

Health officers and sanitarians had similar experiences in formal training and supervised field work. Each acted in the capacity of an assistant. Joint classes were held for health officers, sanitarians, and nurses in order that they might see the broad picture of public health and the value of dovetailing their services.

How valuable to the sanitation program can be the public health nurse who, finding an expectant mother drinking from a contaminated water supply, an infant suffering from diarrhea and covered with flies from an insanitary privy, reports these findings to her fellow workers, the sanitarians!

It is encouraging that unusually good clerks have been maintained in Mississippi throughout the war emergency. The quality of personnel dropped less in this field than in any other relating to public health. This has probably been due to the fact that these jobs were filled for the most part by high-type, home-town girls who preferred the stability of a job at home to wartime inflation and inconveniences in other places.

The clerical training program in Mississippi is a 4 weeks' course designed to cover every phase of clerical activities in a county health department. Following this 4 week period of training in Lauderdale County, the clerk comes to the central offices of the State Board of Health in Jackson to observe the functionings of the various divisions. During the absence of the clerk-trainee from her county, a substitute clerk carries on her routine duties.

The clerical training program is sponsored by the Commonwealth Fund and set up on a special budget. The budget provides for an instructor, two substitute clerks, and funds for paying travel and subsistence for trainees. Trainees are selected from clerks who have had considerable experience in a county health department, because such persons

can absorb more of the details connected with clerical duties than new employees.

A number of central office clerks have been assigned to the clerical training center for a period of 2 weeks. During this accelerated course they are better able to appreciate the functionings of a local health department, particularly its clerical duties. From January 1, 1943, through June, 1945, 42 county health department clerks and 7 central office clerks received clerical training.

The venereal disease investigator receives at the center 2 weeks of intensive training following a short period of orientation in his county. After he returns to the county, a supervising venereal disease investigator works with him there immediately to help him with actual field problems as they arise.

Though exigencies of war shook to its foundations the formal training center program for health officers, nurses, and sanitarians, throughout the war valuable training was carried to the public health staff members in the form of county staff meetings, regional institutes, and state meetings. The subject of venereal disease has been one about which a great deal of staff education has been necessary in order to keep up with the new methods of treatment.

During the past year five 1 day regional conferences were held for public health nurses, three 1 day district conferences with health officers, and one 2 day state conference for venereal disease investigators. The purpose of all of these conferences was to bring out the new emphases in the venereal diseases—selection of patients for treatment centers, follow-up on treatment center patients, and renewed efforts in the epidemiology and diagnosis of venereal diseases. Now that the tremendous clinic load has been removed from county health departments—loads running up to 600 and 700 patients per clinic—the health department has



regained its primary function in quick and accurate attention to contact, follow-up, and diagnosis. In investigator, health officer, and nursing conferences a formal presentation in syphilis and gonorrhea facts was given, followed by round table discussion and questions.

After these venereal disease conferences the state supervisor of venereal disease control conducted a full staff conference in each local health department going thoroughly into the findings of the venereal disease survey previously conducted and the way the problem was being met in each county. Complete redirection of the venereal disease program was brought about with a remarkable amount of coöperation and understanding because of the in-service training given through these regional conferences.

A further interesting development in the venereal disease program in Mississippi has been the establishment of the first State Fever Therapy Unit supported by legislative appropriation. Under the direction of Dr. H. Worley Kendell, ten nurses have been given training in hyperthermy treatment and physiology.

Mississippi's program of training newcomers in the public health family—health educators—has got off to a good start. Demand for health educators in the state has been very much in excess of the supply available through normal channels. Recognizing the fact that the State Board of Health had to "grow its own," a project to seek outside aid for this purpose was sponsored jointly with the State Department of Education and the Delta Council, potent regional chamber of commerce. The General Education Board, joint sponsor with the International Health Division of the Rockefeller Foundation of Mississippi's coördinated school health project, agreed to back financially the program of training health educators over a span of several years.

Careful recruitment has made possible a wise selection of trainees with intellectual leadership, emotional maturity, and a background in teaching or other public service fields. At present eight such individuals are in schools of public health securing graduate work leading to either a Master's Degree in Public Health or a Ph.D. with public health emphasis. Three of these individuals are Negroes. In addition, one health education trainee is being financed by maternal and child health funds, and another by tuberculosis funds. Health educators at work have been trained through funds from the Commonwealth Fund, Kellogg Foundation, U. S. Public Health Service (Tuberculosis), U. S. Public Health Service (Venereal Disease), and U. S. Public Health Service. (Title VI).

An experiment in short-range in-service training of teachers which has met with decided success has been tried in Mississippi during the past two years. Carefully selected teachers who were well known and highly regarded in their counties were brought to Jackson and given a 2 week course in the fundamentals of public health, with particular reference to maternal and child health.

Given definite and specific instructions in organization, how to work up immunization conferences, tuberculosis clinics, maternal and child health conferences, these educators were able to increase attendance at already scheduled conferences and clinics, thus making the professional time going into medical and nursing conferences more far-reaching. Each summer educators attained proficiency in teaching the simple facts about a few of the major fields of public health and greatly increased the understanding of those attending conferences and clinics through personal and group teaching in such fields as nutrition, mouth health, and tuberculosis.

Although not paid during the school

term by the local health departments in which they worked, these teachers, because of in-service training and experience they received, are carrying the message to Garcia in strategic ways throughout the year.

The initiation of the extended program in malaria control and DDT dusting in fourteen counties of Mississippi led to staff education in this field. A 2 day institute was held for Malaria Control in War Areas personnel to acquaint them with the program and to demonstrate spraying techniques. The excellent educational facilities of Malaria Control in War Areas offices in Atlanta were used in staff education on malaria of four health educators, two entomologists and one engineer. Two engineers, one educator, and one entomologist took special work in typhus control and DDT dusting at Malaria Control in War Areas offices in Savannah, Georgia.

Summer health educators working in counties having the extended malaria control program were held over three extra days following their 2 weeks' orientation course for special instruction in entomology, parasitology, and in the medical and engineering aspects of malaria control.

Numerous postgraduate courses for physicians have been given in Mississippi during recent years. Mississippi physicians have attended pediatrics and obstetrics courses at Tulane School of Medicine, Saluda, North Carolina, Harvard Medical School, and Slossfield Health Center at Birmingham, Ala. In March, 1945, five 1 day wartime courses in pediatrics and obstetrics were held with the cooperation of the Tulane School of Medicine throughout Mississippi. These were enthusiastically received by busy general practitioners.

In March, 1943, Dr. P. S. Pelouze of the University of Pennsylvania Medical School held fourteen special meetings of medical societies in Mississippi, speaking on the diagnosis and modern

management of gonorrhea. These were attended by 65 per cent of the physicians of the state.

For many years a program in medical education has been carried on through cooperation with the state and local medical societies, State Board of Health, Tulane University School of Medicine, and other medical leaders.

Of value also in a constant program of in-service training is the planned staff conference, both local and state. Since 1939 the State Board of Health has had regular staff conferences for central office staff members. In the democratic way a committee of staff members plans these conferences each year for twelve months in advance. Conferences usually last an hour and a half and are held every three weeks on Saturday mornings when field workers are in.

Staff conferences for 1944 included the following:

- Jan. 8 Periodic Health Examination  
Dr. Felix J. Underwood  
Dr. D. V. Galloway  
Dr. A. L. Gray
- Jan. 29 War Neuroses  
Col. J. M. Cotton
- Feb. 12 Mississippi's EMIC Program  
Dr. Virginia Howard
- Mar. 4 Public Health and Social Welfare Relationships  
Dr. W. G. Hollister  
Miss Sara P. Ricks  
Miss Marie Hoffmann
- Apr. 1 Control of Tuberculosis among Negroes  
Dr. Henry Boswell
- Apr. 22 How the Army Rehabilitation Program Can Be Used to Train New Public Health Personnel  
Dr. J. A. Milne
- Apr. 22 How the Laboratory Can Protect Citizens of Mississippi Against the Post-war Spread of Disease  
Dr. H. C. Ricks
- Apr. 22 Communicable Diseases After the War  
Dr. A. L. Gray
- June 3 Youth Problems in Wartime  
Mrs. T. Grafton Abbott
- July 1 Mississippi State Board of Health Meeting  
Dr. Felix J. Underwood

- Aug. 3 The School Health Service  
The Division's staff
- Sept. 23 Milk in Mississippi  
Dr. N. M. Parker
- Oct. 21 American Public Health Assn. Meeting—A Review  
Various staff members
- Nov. 18 A Year in Child Guidance  
Child Guidance Staff
- Dec. 30 A New Public Health Year  
Dr. Felix J. Underwood

Participants, while mostly health department personnel, may come from related fields and other agencies.

Planned staff conferences are held in a number of the county health departments. An example follows:

- Aug. 17 Venereal Disease. Case finding Program and Investigation.  
Educational Aspects  
Mr. A. W. Comings  
Miss Cassie Smith
- Sept. 7 Venereal Disease. Laboratory Contributions  
Mrs. Katie W. Field
- Sept. 21 Malaria. Problem and Recommendations for County.
- Oct. 5 Disease Carried through Food, Water, Milk and Improper Sewage Disposal. Problems of County and Recommendations.  
Mr. Keith Smith
- Oct. 19 Dental Hygiene  
Mrs. Lucile Pitchford
- Nov. 2 Mental Hygiene.
- Nov. 23 Tuberculosis, Stage, Chances for Cure of Each Stage. Case Finding Program in the County.  
Recommendations.  
Mrs. Dorothy Myers
- Dec. 7 Health in Religion.  
Dr. R. C. Bourret

The medical and public health library of the Mississippi State Board of

Health has been of tremendous significance in keeping public health workers in the state on their tiptoes. With its 6,200 volumes and numerous current journals, the library serves the needs not only of public health workers—health officers, public health nurses, dental hygienists, engineers, sanitarians, health educators, and others—but physicians, dentists, nurses, laboratory technicians, and the like who are concerned with individual and community health.

Recognizing that in that Utopia "when things get back to normal" a full-time 12 month course in public health is the desideratum for the majority of public health employees, public health leaders are recommending an enlargement and improvement of existing public health schools, and perhaps the establishment of additional public health schools to meet the need for trained workers. It is even possible when Mississippi has its own 4 year medical school that there might well be in connection with it a department or school of public health.

Certainly for the field which is the leader in health protection programs, the most carefully selected and best trained people are none too good. Where excellence can be learned we must teach it. Where it can be cultivated we must tend it. Public health has come of age. Its youth has been so creditable that it is destined to assume health leadership in increasing amounts as time goes on.

## New Virginia Communicable Disease Control Manual

The Department of Health of Virginia, of which Dr. I. S. Riggin is the Commissioner, is rewriting its *Communicable Disease Control Manual*. The new *Manual* is being patterned after the recommendations of the As-

sociation's 6th edition of *The Control of Communicable Diseases*. Dr. Henry H. Henderson, Virginia State Epidemiologist, will supervise the preparation of the revised manual.

# Health Education

LAWRENCE K. FRANK

*Director, Caroline Zachry Institute of Human Development, New York, N. Y.*

EVERY society has had some kind of health education, usually expressed in proverbs and folklore and the teachings of its religion. These beliefs and practices are passed on to each generation of children and youth as the distilled wisdom of the past to guide their living and help them to escape the misfortunes and illnesses to which the group may be exposed.

Health education programs usually start with a body of knowledge about diseases and human functioning which constitutes the subject matter of their programs. This basic scientific and clinical material is then organized into a systematic course of instruction like other subject matter, such as geography or biology or physics and chemistry.

While this method of approach is in accord with prevailing educational theory and practices, and is being supplemented by visual and other aids, it largely fails to recognize the traditional beliefs and practices, with respect to illness and health and the very personal, emotional character of health.

From different studies, it has become clear that early in childhood the individual begins to develop an image of his or her own body and a way of feeling about bodily functions which usually persist, as the individual's characteristic mode of adult thinking, acting, and feeling toward all questions concerning his or her own body and its functioning.

Eating is subject to a variety of parental practices which have large significance for the infant and his subsequent attitudes and feelings about food. Some babies, especially those

who are breast fed, on a self demand basis, may develop a feeling of enjoyment of eating which makes eating an occasion for gratification. Other babies, compelled to accept a rigid feeding schedule which may ignore their individual needs and subject them to prolonged hunger, may develop strong feelings about food and eating which continue to operate, especially if reinforced by difficult weaning and "forced feeding." These babies may never develop a feeling of enjoyment toward eating, but rather they may learn to resist food, especially when the parents try to force them to eat. Some may learn to use food as a weapon to coerce their parents, refusing to eat unless they are cajoled and bribed, while others use food and digestion to fight their parents.

Thus eating may become affected with a variety of feelings and serve as a form of parent-child conflicts, as shown by the many feeding problems among preschool children, the finicky appetite among school children, and the food aversions among adolescents. What should be a normal physiological process of eating and enjoying food thus may be loaded with all manner of emotional conflicts and moral issues. Later on these persistent feelings about eating and the traditional food habits the child has learned in the family may operate to defeat the health and nutritional programs designed to foster better nutrition.

Eliminations likewise often become the focus of parent-child conflicts over "toilet training," especially when at-

tempted too early or too rigorously. Thus, the process of eliminating may become an occasion for anxiety and guilt that persistently interferes with normal regular functioning.

Too many children are punished by being deprived of food or by being subjected to physical pain, as in spanking or beating. This may create a feeling about his body as a source of pain and unhappiness. It is not infrequent for parents to tie a child's hands and otherwise attempt to block and to punish him severely for infantile masturbation. Thumb sucking also may be rigorously opposed by various methods of restraint and physical punishment.

Sleeping is another process which may become a persistent focus of emotional conflict over the parental practices of enforced naps, keeping the child in bed as a punishment, and similar use of a physiological function for disciplining the child.

The emotional reactions of the child that we call anger and rage also are basic physiological processes which parental training often warps and distorts into persistent reaction patterns such as resentment against adult authority. Frequently the naive impulsive emotional response which is quite appropriate to an infant or young child is so strongly punished that the child learns to repress any overt expression of his feelings, which thereafter he releases in various disturbed functions—digestion, eliminations, breathing, etc., and in fantasies or disguised and surreptitious rebellion.

All these practices of infant and early child care and rearing develop in the child a way of feeling about his own body and its various parts, reactions, and functions. He may feel at ease and be at peace with himself or he may develop strong feelings of anxiety or of guilt over bodily functions and of resentment against adults who make him unhappy by these often unnecessary

deprivations, frustrations, coercions, and painful punishments. These feelings tend to persist as the individual's characteristic way of feeling about himself, and they give rise to his image of his own body.

Often the child's image of his own body is influenced by the not infrequent parental teachings that the human body is shameful and indecent, to be kept hidden and ignored or even despised as unclean or dirty. Anything below the neck is to be covered up and tacitly denied, not pleasant or nice or as a source of wickedness and evil.

The persistence of this traditional attitude toward the human body is of large significance for medicine and for health education because it operates in so many ways to defeat what health education is attempting to achieve. It also appears in what many people believe and do about illness and their refusal to utilize available medical services for their own personal care. It must not be forgotten that illness has long been considered by some groups as a visitation or punishment for an individual's wickedness or failure to perform piously his religious duties. These convictions are reinforced by the traditional belief about the human body, which may then become the source of lifelong emotional resistance against not only health education but also needed medical care as well.

Another influence in the life of the young child which may establish persistent attitudes and feelings toward health education is the contacts with physicians and nurses. We forget that the young child may be seriously and permanently antagonized in his often painful experiences with physicians, such as immunization, vaccination, and inoculation.\* When the child is seri-

\* It has been proposed that the routine injections be given by someone the child will not again see or be treated by so that he will develop confidence in the physician and nurse who care for him, or that local anesthetics be used on children.

ously ill and suffers pain, as with coughs, ear conditions and similar localized infections, he may develop a feeling that anything to do with illness or health care is unpleasant and to be avoided so far as possible. These reactions are not inevitable, however, because some children who have been prepared for these experiences and who have been handled patiently and gently, do not develop these emotional reactions to physicians and these attitudes toward illness and health. But, for the bulk of children, it is safe to say that their early experiences with physicians and nurses, like their early experiences with dentists, is usually painful and disturbing and productive of persistent anxiety toward their own bodies and of resistance or hostility toward those upon whom they may have to depend for care.

During adolescence the individual boy or girl is again exposed to a number of experiences which may further contribute to his or her attitude toward health and feelings about bodily processes. While some adolescents grow, develop, and mature with relatively little disturbance or strain, a considerable number of adolescent boys and girls undergo a prolonged period of physiological instability as they grow rapidly in stature while their various organ systems and functional capacities lag behind. Thus, these adolescents are sometimes compelled to live for two or three years on different levels of maturity, with all the incoördination, clumsiness, and instability which this uneven growth and development entails. Such boys and girls may become exceedingly sensitive about their own bodies and worried over their functional capacities: the girls especially may be emotionally disturbed over the beginning of menstruation, particularly when it may require one or two years before they attain any degree of normal menstrual regularity.

It should be remembered that during adolescence the growing boy and girl have to become accustomed to their changing bodies and how to live with the new functions, impulses, and sensitivities that come with sexual maturation. Also they are expected to clarify and accept the masculine or feminine rôles and ways to act and feel as a man or woman in our culture.

There is also a reluctance to accept adult advice and guidance, often a strong resistance against the various programs of hygiene, health education, and physical training. These programs, however well meant, often arouse greater anxiety in boys and girls who are worried about their normality and preoccupied with the extraordinary beliefs about the human body and its functions, derived from their childhood experiences and from adolescent folklore.

The scientific knowledge and good advice offered in the courses in hygiene and health education are therefore often rejected and treated with horseplay because they cannot be emotionally accepted or reconciled with these preconceptions and anxieties.

The experiences of the young child and the adolescent must be recognized as playing a considerable rôle in the readiness of individuals to accept and to be guided by various forms of health education both at home and in the schools.

It may be appropriate here to point out how much of the sex education we offer youth is apparently designed to frighten and terrorize young people by picturing the horrors of venereal disease and the wickedness of prostitution. Neither of these is very helpful to young people who are struggling to find some way of understanding the place and function of sex in human living, handicapped by the deliberately misleading ideas given them in early childhood. Nor does the elaborate teaching of the processes of gestation

provide much guidance to adolescents who are not interested in having babies but in trying to find out what to do and say to members of the other sex and how to translate sex into love in accordance with our traditional aspirations.

When one looks at the large picture of health education and especially at what is being attempted among adults, it is evident that much of the present endeavor is ineffective because it does not recognize these personal attitudes and emotional reactions of individuals toward their own bodies and these traditional beliefs about the whole subject of health. While it is customary to speak of the instinct of self-preservation, and to assume that each individual is eager to enjoy health, or at least freedom from illness, it must not be forgotten that individuals also are resistant to changes in their ideas and living habits. They will change only when they can emotionally accept new beliefs and practices as psychologically equivalent to their old habits and expressive of their cherished values. It is also clear that the most difficult and baffling aspect of health education is this intangible but potent attitude of the individual toward himself or herself. Not infrequently men and women may vigorously reject what they may urgently need in the way of medical advice and treatment because they have no respect for their own bodies and feel they are not worthy of such help.

A recognition of these attitudes and emotional reactions toward illness and health is essential if health education is to become more effective in the life of the individual. There are innumerable beliefs and practices about health and medicine derived from the past which persist as folklore and customary practices in the lives of individuals, especially in the United States, because we are made up of representatives of so many different nationalities, each with its traditions to which they loyally

adhere. These beliefs and practices enjoy all the sanction of immemorial tradition, and they may persist in the face of the most vigorous programs of health education and despite repeated treatment by scientific medicine.

If health education were approached as a problem of epidemiology, it would be appropriate to start, *not* primarily with the scientific knowledge to be taught, but with the discovery and delineation of the ideas, beliefs, and feelings about human functioning, health and illness which constitute the basic patterns of different groups in the population. This would mean studying the existing beliefs and living habits of different groups of people in each community to reveal their cultural traditions, that vary according to ethnic, national backgrounds, religious affiliations, and other groupings. These traditional ideas and living habits constitute the social, cultural environment in which people live, and offer the major obstacles and resistances to health education and to medical care. Health education, therefore, may be conceived as a process primarily of changing these cultural traditions by which people live, just as much as public health is changing the geographical-biological environment. This means providing emotionally acceptable equivalents based on scientific knowledge for the older beliefs and practices that must be replaced, if people are to understand and accept the new knowledge essential for their health.

A comprehensive program for health education would endeavor to focus the growing knowledge of human functioning and what is necessary and desirable in the maintenance of health for each stage in the life career of the individual, to be transmitted by those who are in a strategic position to influence the thinking and action of individuals in each of those stages. Thus, health education would increasingly develop preconcep-

tual preparation for child bearing since it is becoming evident that the physiological, nutritional, and emotional readiness of the woman for pregnancy plays a large rôle in the development of the unborn child and in child bearing. This means that any attempt to reach women for preconceptual preparation must be addressed to the adolescent girl, through high schools and colleges, in order to give her an understanding of her own functional needs and capacities and a realization of how she can better prepare herself for pregnancy, thereby protecting herself and favoring the development of her child. Here it would be necessary to study the folklore that circulates among adolescent girls, and the many unfounded beliefs and practices of personal hygiene which make health education of adolescent girls a difficult task. Moreover, it would be necessary to recognize the strong emotional reactions among adolescent girls over their female organism and functional processes, including their acute anxieties, their feelings of guilt, and their frequent resentment at being a woman in a "man's world."

An attempt to reach adolescent girls and young women with such a program is especially important because the further reduction of maternal mortality and of pregnancy wastage, that is, of spontaneous abortions, prematurely born infants and stillbirths, seems feasible only through better understanding and more active collaboration by women themselves for their own protection during pregnancy.

The task of health education is also to devise more effective methods of guiding mothers in the care of infants and young children since what they do and what they fail to do is so largely controlling over the child's physical and mental health. Much more can be done in the education of young women during high school and college years when

the new understanding of child growth and development and of early personality formation can be presented as part of their general education. At present those engaged in advising young mothers are so often discouraged by the complete lack of even the most simple understanding and the inability to accept and utilize what pediatrics and well baby clinics and mental hygiene teachings have to offer. The persistence of older ideas about babies and children negates much of the teachings in well baby clinics and infant hygiene stations.

The various professional groups concerned with women, children, and the family must themselves receive further education and training if they are to contribute to this larger task. When physicians and nurses and social workers learn to intercommunicate and are better prepared for parent education, they can translate new knowledge and understanding and insights through their usual professional contacts. It is essential that these different professions integrate their teachings to avoid confusing women with conflicting ideas and advice, as at present.

Health education must be recognized and accepted as a vitally important element in the total educational program, at least of equal significance with the training in various skills and the acquisition of various academic subject matters.

It cannot be too strongly emphasized that the aim and purpose of health education is to help the individual student to reorganize his ideas, his thinking, his image of his own body, and, above all, his feelings and conduct, especially in his living habits, so that the conservation of his health becomes incorporated into his daily thinking, living, and feeling. The aim of health education should be to reorient the individual's attitudes and feelings toward his own body and its functions and needs; to give him the



new understanding and conceptions which he can use in place of the many obsolete, even archaic, beliefs about human functioning and living, to inform him about desirable health practices and health resources; and, above all, to create the feelings which are basic to individual health care and more intelligent living.

It may be urged that an effective program of health education must be at the same time an effective program for the development of better mental health among students at all ages. In many cases the most desirable and effective approach to the student may not be through direct presentation of materials dealing with health, but rather by a variety of experiences which will modify and change some of his basic assumptions and beliefs and feeling tones about life in general and himself in particular.

When so approached, it becomes clear that for different students, different subject matter courses and school experiences may be most influential in redirecting their thinking and feeling and living habits. Thus, some students may gain illumination through the course in literature, others through the work in biology or even in the physical sciences, chemistry, and physics; other students may be more susceptible to materials and experiences that are presented in social studies and social sciences, and others in art work or dramatics or home economics. In addition to these generally recognized courses, it must be remembered that increasingly the schools must provide a variety of special courses and planned activities, especially for students coming from certain family backgrounds, who need help and guidance in such elementary activities as personal cleanliness and grooming.

A well considered program of health education will make better use of the many opportunities offered by the

schools and colleges through school luncheons, cafeterias, physical education, organized athletics, and whatever form of counselling and guidance may be provided for individual students. Perhaps the major difficulty today is the frequent lack of a clearly formulated program through which these diverse activities and specialized personnel can be articulated into a more coherent and effective program of health education for students. Too often each teacher counsellor and administrator pursues his or her own program with little concern for what others may be doing and with little or no realization of how difficult it may be for the student to reconcile and integrate these diverse programs and conflicting advice.

A threshold task for health educators is to formulate a broader, more comprehensive conception of what is essential so that in the planning of the total curriculum, in the establishment of the educational programs, and in whatever is done to and for the individual student, the objective of health education is explicitly recognized and effectively provided for. When so approached, it will be found that many of the existing courses in the elementary, and in secondary schools especially, may need considerable reorganization and reorientation so that they will be more nearly addressed to the understanding and the needs of individual students at different stages of development and made more relevant to what children and adolescents are really interested in and want to know.

Health education, however, is not limited to the formal educational programs of our schools and colleges. There is an immense amount of time, energy, and money spent on health education programs addressed primarily to adults, approached through lectures, radio programs, and a wide variety of printed materials of varying degrees of effectiveness. At the present time the

organization and operation of these many programs of health education are conducted by different organizations, each of which has selected for its major emphasis some one or more of the major threats to individual health or needs for healthful living. Thus, there are specialized and independent organizations and programs concerned with tuberculosis, infantile paralysis, with cancer, with diseases of the heart and circulation, with diabetes, with rheumatic fever, with venereal disease; also nutrition and care of teeth, eyes, ears, preparation for pregnancy and child bearing, and so on.\* It is becoming clear that this fractionation of health education, while offering certain advantages of specificity, at the same time suffers from the inevitable confusion which these separate programs create in the mind of the public.

At present, health education is aimed at families and individuals in the endeavor to persuade or compel them by various appeals, rational, intellectual, expository, promise of personal gains and advantages, fear of disease or death, or authoritarian pronouncements, to accept what is offered. To a large extent, it is a mass program designed to change individuals, using various motivations and selected bodies of new knowledge, to influence individual decision and action. But the arguments used, the threats and the promises made, and the invocation of science are both psychologically and socially of questionable validity and of little effectiveness.

This diversity of programs warrants more careful study and reflection because in addition to the many privately supported agencies, there are many governmental organizations on the federal, state, and local levels also engaged in conducting different programs of

health education. Sooner or later there must be some resolution of the existing divergencies through the development of generalized methods and practices that can and should be utilized by all engaged in health education.

All the different endeavors are focused on the same basic problem, namely, of persuading families and individuals to modify their living habits in the light of new knowledge and new resources for meeting these persistent life tasks.

There is need for some larger strategy to guide all these different efforts and some more effective techniques for approaching individuals and families and persuading them to alter their customary living habits. In such a larger strategy, health education would take its place as one, but only one, of the objectives to be pursued along with all the other efforts to improve human living. Such a correlation of programs will not occur, however, until each of the various organizations conducting these diverse programs recognizes that it is part of this larger endeavor and realizes that its specific efforts, whether for health or nutrition or child welfare, mental hygiene, or any other objective, can be effectively sought only through this coordinated approach.

In addition to these programs conducted by public and private organizations, there are the innumerable commercial programs which offer advice and often give specific instructions about health and care of illness. Thus, in the advertisements of various drugs and medical preparations and foodstuffs, the public is being told what to believe and what to do about health needs, and how to diagnose and treat illness and impaired functions. The radio commercials especially are aimed at the family and the individual and often create further confusion and conflict in people's beliefs and practices by what

\* U. S. GOVERNMENT PRINTING OFFICE: 1935

they so insistently urge. Not infrequently these commercial programs are lacking in validity, and deliberately play upon the anxieties of people for selling some health food or patent medicine.

The responsibility of individual physicians for the development of health education should also be recognized here. Unfortunately, the contacts of patients with physicians rarely serve as educational experience for the patient, because the doctor is either too busy to offer any explanation and advice beyond the specific instructions for the illness or disease he is treating or he is not interested in trying to modify living habits of patients. Moreover, many physicians are convinced that nothing will change people's ideas and living habits because they are too "dumb" or indifferent. Every physician is faced with this baffling problem of how to communicate his knowledge and his judgment of the individual patient in such a way that it will be accepted by the individual and will be utilized in guiding his daily living. Even when the patient may be in a highly precarious condition which will become more threatening unless he modifies his customary practices of eating, drinking, smoking, sleeping, working, playing, and so on, he may still be resistant to any medical advice and unable or unwilling to modify these customary living habits. When it is realized that each individual develops a way of life which he can change only when helped with skillful guidance and the reinforcement of someone he trusts and admires, it will become obvious why the customary didactic advice to patients is of so little avail. For many individuals any effective alteration in their way of life calls for something equivalent to psychotherapy since they can change their mode of living only in so far as it is accompanied by some alteration in their personal orientation and their

profound feelings toward life. Group therapy may provide an effective procedure, as already being used with diabetics and neurotics.

Perhaps the most fruitful opportunity for health education of the individual patient is in the period of convalescence when he may be more susceptible to guidance and redirection because he is recovering from an illness and may be emotionally more receptive to such advice.\*

As more and better provision is made for convalescent care, the opportunities for this health education will be increased. Full advantages of such opportunities will, however, not be taken unless there is a clear realization of the kind of reeducation and psychotherapy that is needed to be effective with different patients. Recent experiments in the development of group methods indicate that individuals with much the same ills and needs can be effectively helped through group discussions and group decisions. It has been found that the association in a group with common needs and difficulties may be utilized as a very potent influence upon the individual to modify his customary patterns of thinking and feeling and living.

As organizations are established for the provision of medical care under different auspices, the need for better health education will become more urgent. Those enrolled under such plans usually have little understanding of how to make intelligent use of and to get full benefit from the medical services to which they are entitled. Many individuals also are inclined to make unnecessary demands upon the medical services made available through prepaid plans, thereby adding to the cost and interfering with the effectiveness of the organization. A systematic effort to reeducate members of such

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\* New York Academy of Medicine, 1944 Conference on Convalescence and Rehabilitation.

medical care organizations must be undertaken as a necessary step in the further development of prepaid medical care and of preventive medicine to keep people well.

The protection and the guidance of the individual to meet the sequential changes in living as he grows older will soon become one of our major health problems because of the rapid growth of the population over fifty, among whom there is now so much chronic illness, disability, and impairment, and psychosomatic disorders. Organizations for medical and health care should become the major agencies for health education, just as the family doctor in previous generations advised and cared for individuals from childhood on.

To a considerable extent health education and medical services have been provided on the assumption that each individual was relatively free to develop whatever design of living he might prefer and to jeopardize his health and functional efficiency to whatever extent he might wish. Health education has endeavored to persuade each individual to modify the use of this freedom, while medical services have endeavored to provide such care and treatment as he may require if he develops an acute illness or otherwise has impaired his functional capacities by his customary way of life.

With the development of programs of health supervision and medical care in the armed forces, with the rise of organized efforts in industry to provide health supervision and with the development of various forms of health and medical care in educational institutions and of prepaid medical care in communities, we may be undergoing a significant modification of this historic conception of individual freedom and responsibility with respect to health.

While there is no immediate prospect of any such movement, it is possible that in the years ahead there may be

a growing acceptance of the principle that the individual is not at liberty to endanger his life and to jeopardize his health, because he is a responsible, participating member in a social order, whose carelessness or perversity in regard to health is a threat to the integrity of that social order. The development within recent years of programs designed to discover those who have been exposed to tuberculosis and venereal disease and to compel them, if necessary, to submit to treatment, should be considered as one possible indication of this future trend. Likewise, the commitment of those with mental disorders offers another indication. Reference should also be made to the growing requirements of vaccination for smallpox and of various forms of immunization, for example, diphtheria, which are required of all children seeking admission to the public schools. Further indications of this movement are to be seen in the progressive expansion of public health controls which are being exercised over an increasing range of individual and organized activities where either the individual himself or the community may be threatened by what he does or fails to do.

To the extent that the causes or sources of illness are understood, it is probable that our historic attitude toward the sick may undergo a considerable modification. Instead of thinking of the individual who is ill as unfortunate, it is likely that for many forms of illness and disability and impairment, the individual will be considered to have been grossly negligent and careless or unintelligent, as suggested in Samuel Butler's *Erewhon*, years ago. It is illuminating to regard the changes that have taken place in the conception of accidents and their prevention during the past thirty or forty years, bringing a clearer recognition of how often an "accident" is not unrelated to the per-

sonality of the one injured and to various controllable factors in the environment.

These speculations about the future are not irrelevant to the tasks of health education today because sooner or later those engaged in health education must clarify the basic assumptions upon

which they will proceed, and endeavor to formulate some kind of social philosophy and concerted plans of operation that will more effectively translate new knowledge into living habits and will guide our whole social order in the interest of health care and human conservation.

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## Know Your Public Health Nurse Week

President Truman paid tribute to the more than 20,000 public health nurses of the nation in a message in connection with the first annual observance of Know Your Public Health Nurse Week, April 7-13. Know Your Public Health Nurse Week is sponsored by the National Organization for Public Health Nursing with the cooperation of the U. S. Public Health Service.

The President's message follows:

The Observance of "Know Your Public Health Nurse Week" brings long overdue public recognition to one of the most important groups of health workers in the country. I am pleased that this annual tribute has been inaugurated at a time when our people are awakening to the necessity for a greatly expanded public health program.

If we are to attain "health security for all, regardless of residence, station or race—everywhere in the United States," as requested in the recent health message to the Congress, we shall need not only more medical facilities,

but also more doctors, scientists, dentists, nurses, and other specialists. Adequate public health nursing service for all will require around 65,000 public health nurses—or more than two new nurses in addition to every one now on duty in local, state, and federal agencies.

There is scarcely any public health activity in which the services of the specially trained nurse are not utilized. Her skills complement those of the family physician when she carries out his instructions for home care of the patient in a wide variety of situations. Today, when our civilian hospitals report as serious personnel shortages as they experienced during the stringent war years, the stay of patients is being cut to a minimum and follow-up care in the home is of paramount importance.

Thus, the public health nurse is one of the strongest links in the chain of disease prevention and the promotion of good health on the part of both children and adults. Her contribution to better individual and community health cannot be overestimated. It gives me genuine pleasure to pay tribute to the public health nurses of America. I hope the day will not be far distant when their services will be available to the total population.

# Infectious Hepatitis— Presumedly Food-borne Outbreak

MARGARET R. READ, M.D., HULDAH BANCROFT, PH.D.,  
JAMES A. DOULL, M.D., DR.P.H., F.A.P.H.A., AND  
ROBERT F. PARKER, M.D.

*Demonstrator of Medicine; Assistant Professor of Biometrics; Elizabeth Prentiss  
Professor of Public Health; and Associate Professor of Medicine; School of  
Medicine, Western Reserve University, Cleveland, Ohio*

IT is commonly believed that the hepatitis seen in epidemic proportions in members of the Armed Forces in 1942–1943 was a human infectious disease acquired from human serum used in preparation of the yellow fever vaccine then in use.<sup>1</sup> This belief presupposes that there naturally occurs in man a hepatitis due to a virus which may under certain conditions be present in the serum or plasma. If analogy with other virus diseases is valid, it may be presumed that a group of agents might cause a disease having similar clinical characteristics.<sup>2</sup> It would seem worth while, therefore, to record each outbreak of what clinically appears to be infectious hepatitis in which the mode of transmission seems reasonably clear even though conclusive evidence as to the viral cause or exact mode of transmission may not be available.

In the late spring of 1944 an outbreak of infectious hepatitis occurred among students at Western Reserve University School of Medicine. The outbreak was explosive, onset dates for all 24 cases falling between May 26 and June 5 (Table 1).

Cases developed in all four classes: 9 in the first year, 7 in each of the second and third years, but only 1 in the fourth year. All patients were members of a single fraternity.

TABLE 1	
Day of Onset of Symptoms in 24 Cases	
Date	Number of Cases
May 26.....	1
27.....	2
28.....	3
29.....	0
30.....	3
31.....	3
June 1.....	4
2.....	4
3.....	1
4.....	2
5.....	1

Early in April, two first year students were hospitalized because of jaundice. These two men were not members of the fraternity and, as far as could be determined, had had only casual contact with the subsequent patients. One case developed in a dental student two months after the principal outbreak, but again history of only very casual contact was obtained. Other than these, no cases were recognized during the year of 1944.

Data relative to the eating habits of members of the fraternity are shown in Table 2. Of 101 members of the fraternity, only 14 men lived in the house and ate all of their meals in the house dining room. Four cases developed in this group, an attack rate of 28.5 per cent. Sixty men regularly ate all or part of their meals at the house but

did not live there. Among these there were 20 cases, an attack rate of 33.3 per cent. The remaining 27 members either ate no meals or only an occasional one at the house. No cases occurred in this group. No cases occurred in students other than members of the fraternity, in spite of close daily contact in classroom and laboratory. These facts would indicate that regular eating at the fraternity dining room was an important factor in determining the risk of attack.

TABLE 2

*Relationship of Meals Eaten at Fraternity House to Attack Rate*

<i>Frequency of Eating at Fraternity House</i>	<i>Total</i>	<i>Patients</i>	<i>Attack Rate Per cent</i>
Eating regularly			
Resident	14	4	28.5
Non-resident	60	20	33.3
Eating infrequently	20	0	0.0
No meals *	7	0	0.0
All members	101	24	23.8

\* March 1 to June 1, 1944.

An analysis of the number of meals eaten at the house revealed both more regular and more frequent eating by the patients than by the nonpatients. Since an incubation period of from 20 to 34 days<sup>3</sup> has been reported in experimentally produced infectious hepatitis, a study was made of meals eaten between April 10 and May 15. This showed that the patients on the average ate 47.5 meals out of a possible 84 served, as compared with 25.9 for nonpatients, a ratio of 1.8 to 1. For a period of 3 months prior to the outbreak the ratio for meals eaten by patients to those eaten by nonpatients was the same.

An attempt to select a single day on which the infection might have occurred was disappointing. On no day did all the patients eat all their meals at the house. Considering only lunch and dinner, since the proportion of breakfasts eaten by both patients and non-

patients was relatively small, there were two days, March 8 and 9, on which every patient ate either lunch or dinner or both. On those days, respectively, 28 and 31 of the 77 nonpatients ate neither lunch nor dinner at the house. Infection occurring on these dates seems unlikely in view of the experimental work reported, as an incubation period of 80 days would be much too long.

There were, however, periods of two successive days each on which every patient ate either lunch, dinner, or both on one or the other or both days. These periods were April 27 and 28 and May 9 and 10. On the first of these two periods, the number of nonpatients who ate neither lunch nor dinner was 18, on the latter 31. Thus either of these two periods might have been the days on which infection occurred.

Investigation showed that the kitchen and dining rooms were clean. Left-over food was stored in refrigerators. Pasteurized milk was obtained daily in 2 gallon jugs and kept covered, but not on ice, until serving. All water used came from the regular municipal supply. Inspection showed no evidence of rat infestation.

Unfortunately no record was kept of the food served at individual meals. Consequently no single article of food could be incriminated. A study of the eating habits of the patients and a sample of nonpatients revealed no essential difference. There had been no symptoms of unusual illness on the part of any employees handling food. Nevertheless, evidence points strongly to an epidemic spread through some article or articles of food served in the fraternity dining room.

The clinical picture of the disease was quite uniform in the great majority of the cases. A number of the salient features of the disease are presented in Table 3. In most cases the onset of the disease was insidious. Malaise and general myalgia gradually increased,

TABLE 3  
*Frequency of Various Clinical Signs in 24 Patients*

<i>Clinical Signs</i>	<i>Number in Which Sign Occurred</i>	<i>Remarks</i>
Hyperemia of pharynx	11	Slight to moderate degree. No associated symptoms.
Superficial lymphadenopathy	6	Usually cervical chain only. Generalized in 2.
Enlarged spleen	6	In one case extended 4 cm. below costal margin. Persisted for 4 to 14 days.
Enlarged liver	20	Varied from a barely detectable enlargement to one extending 4 cm. below costal margin. The liver was fairly firm, edge smooth and somewhat rounded. Usually somewhat tender. Persisted for 4 to 14 days.
Bradycardia	22	Lowest pulse rates were 44 to 60.
Leukopenia	16	Below 5,000 WBC's per cu mm. Highest count, 6,350.
Clay colored stools	10	
Albuminuria	12	Slight to moderate.

chilly sensations were noted, and fever appeared which might rise to 38° or 39° C. About half of the men complained of orbital pain at the time of onset. Anorexia appeared early and by the end of 4-7 days had become severe. By this time nausea was present also, and in many cases was associated with almost intractable vomiting. Dark urine was noticed soon after the onset of illness. In a few cases, it was almost the first sign of disease. By the 4th or 5th day the fever had begun to subside, and within a day or two jaundice was evident and this continued to deepen for several days.

By the end of the second week definite improvement was evident in nearly all cases. Appetite returned, epigastric distress subsided, and sometimes a decrease in the depth of jaundice was apparent. Asthenia persisted in most cases for some weeks after the disappearance of all other symptoms or signs of the infection.

Certain features of the illness which these men presented were strongly suggestive of mononucleosis. Although there were no complaints referable to the pharynx, a hyperemia of definitely

abnormal degree was present in half of the patients, and superficial lymphadenopathy was present in one-fourth. Usually this involved only the cervical chain of lymph nodes. In 6 cases the spleen was palpable, in one case extending 4 cm. below the costal margin. In contrast to mononucleosis, the total white blood count was low, a decrease involving chiefly the neutrophilic cells, but usually with a disproportionate increase in cells classed as monocytes, the percentages of which ranged from 7 to 26. The liver was palpable in almost all cases and usually was tender. The icterus index was high in all cases, the highest being 72. The cephalin flocculation test was positive in all cases at some time during the illness. The prothrombin content of the blood was abnormally low in several cases, but no tendency to hemorrhage was observed. Electrocardiograms were made in a number of cases, the findings of which are being reported elsewhere.<sup>4</sup> Essentially, there was a depression of the amplitude of the T wave, the extent of which bore no relation to the depth of the jaundice.

During the period of the outbreak



7 other members of the fraternity, 5 of whom ate regularly at the house, exhibited symptoms possibly caused by hepatitis. In none was jaundice observed.

#### COMMENTS

The clinical picture of the disease in these patients was similar in all particulars to that which occurred among military personnel, and to spontaneous outbreaks in civilian populations.

The possibility of spirochetal jaundice was excluded by studies made by Dr. E. E. Ecker. Blood plasma was examined directly in the darkfield for leptospira. Blood and urine was seeded into Schüffner's leptospira medium and inoculated into young (less than 250 gram) guinea pigs. The urine was alkalinized before collection for culture and animal inoculation. The sera of several patients were examined in convalescence for the presence of leptospiral agglutinins. All of these examinations were negative.

A notable feature of the principal outbreak was its explosive character, suggesting a limited period of exposure of a large group of men. No relation could be discovered between the outbreak and two previous cases of jaundice occurring in members of the student body, and no secondary cases were recognized in spite of the close classroom association of men early in the disease with presumably susceptible individuals. In the case of the dental student, the contact was at second hand. Evidence points clearly to the fact that this infection was confined to one fraternity and those who ate regularly at this fraternity had a much higher attack rate than did other members. The evidence of marked disturbance of the lymphatic system was unusually great.

No characteristic change in the differential distribution of white cells could be established and no cells having the characteristics of the abnormal ones which appear in infectious mononucleosis were recognized, but a total of 9 (37 per cent) of the patients had lymphadenopathy, either cervical, general superficial, or splenic, and a white blood count which bore some resemblance to that of mononucleosis.

#### SUMMARY

An outbreak of infectious hepatitis among medical students is described. The outbreak was explosive, involved only members of one fraternity, and primarily those who ate regularly at the fraternity dining table. The cases were not traceable to previous cases, and so far as could be determined led to no secondary cases.

**ACKNOWLEDGMENT**—It is a pleasure to acknowledge the cooperation of Dr. A. B. Denison, Physician in Charge of the Student Health Service, who put these cases at our disposal for study and greatly aided in the collection of the data.

#### REFERENCES

1. Turner, R. H., Snively, J. R., Grossman, E. B., Buchanan, R. N., and Foster, S. O. Some Clinical Studies of Acute Hepatitis Occurring in Soldiers After Vaccination With Yellow Fever Vaccine With Especial Consideration of Acute Attacks. *Ann. Int. Med.*, 20:193, 1944.
2. (a) Burnet, F. M. The Affinity of New Castle Disease to the Influenza Virus Group. *Australian J. Exper. Biol. & M. Sc.*, 20:81, 1943.  
(b) Breslich, P. J., Rowe, P. H., and Lehman, W. H. Epidemic Encephalitis in North Dakota. *J.A.M.A.*, 113:1722, 1939.
3. (a) Paul, J. R., Havens, W. P., Sabin, A. B., and Philip, C. B. Transmission Experiments in Serum Jaundice and Infectious Hepatitis. *J.A.M.A.*, 128:911-915, 1945.  
(b) Havens, W. P. Experiment in Cross Immunity Between Infectious Hepatitis and Homologous Serum Jaundice. *Proc. Soc. Exper. Biol. & Med.*, 59:148-150, 1945.
4. Dehn, H., Feil, H., and Rinderknecht, R. E. Electrocardiographic Changes in Cases of Infectious Hepatitis. Study of Eleven Cases Occurring in an Epidemic. *Amer. Heart J.* In press.

# Pertussis Vaccine Prepared with Phase-I Cultures Grown in Fluid Medium

SOPHIA M. COHEN AND MARY W. WHEELER

*Division of Laboratories and Research, State Department of Health,  
Albany, N. Y.*

THE difficulties encountered in the mass preparation of phase-I pertussis vaccine with strains grown on a blood-enriched agar medium are a common experience. Service costs connected with the provision of an adequate and continuous supply of blood and high and apparently unavoidable losses of media and vaccine due to contaminations not only place production expenses at an unreasonable level but also at times may reduce vaccine yields below distribution requirements. The substitution of a fluid medium that does not contain blood and that can be sterilized by heat offers an approach to the solution of these practical problems. Furthermore, vaccine prepared from whole fluid cultures may contain essential soluble antigenic substances not present in the usual pertussis vaccines prepared by suspending in salt-solution cultures grown on human- or sheep-blood agar.

Hornibrook in 1939<sup>1,2</sup> reported that *Hemophilus pertussis* could readily be grown in a fluid medium in which organic nitrogen, as in amino acids, certain polysaccharides, and organic sulfur were considered the essential ingredients. These were supplied by hydrolyzed casein, soluble starch, and cysteine or glutathione; in addition the formula included only inorganic salts and yeast extract or nicotinic acid. This medium was suggested for pertussis vaccine

preparation,<sup>3</sup> but in early trials it was found that modifications were necessary because certain strains of *H. pertussis* grew poorly or not at all, and some alteration in phase-I characters<sup>4,5</sup> occurred. Recent papers by Wilson,<sup>6</sup> Farrell and Taylor,<sup>7</sup> and Verwey and Sage<sup>8</sup> give revised formulas for the medium and report favorable laboratory data on the antigenicity of fluid-medium vaccines. Extracts of liver or human blood cells furnished accessory growth factors. The present paper describes a medium that does not require the addition of such extracts and its use in the preparation of pertussis vaccine. It also reports results of potency tests of the vaccine in mice by the newer method of intracerebral injection of test cultures.

## SELECTION OF FORMULA

The original fluid medium of Hornibrook was compared with various modifications designed by one of us (M.W.W.) to determine the optimum amounts of the inorganic salts, soluble starch, and cysteine hydrochloride required, the effects of the addition of different amounts of copper, iron, manganese, and zinc, of variations in the pH, and of the use of sources of nitrogen other than hydrolyzed casein. Over forty combinations were tried. Two phase-I pertussis strains, Nos. 40103 and 41405, used in routine vac-

cine production<sup>9</sup> were cultivated for from two to five generations in each medium dispensed to provide a shallow layer with a relatively large surface area. The cultures were incubated at 35° C. for at least 3 days and the amounts of their growth estimated daily by comparing the turbidities with those of a set of Pyrex glass standards<sup>10, 11</sup> representing concentrations of from 500 million to 10,000 million *H. pertussis* bacilli per ml. Strain No. 40103 was more readily adapted to fluid medium than strain No. 41405. However, with both, increased growth resulted from the addition of suitable amounts of copper and iron sulfates to the medium, but the growth was markedly granular. By decreasing the sodium and calcium chloride content, cultures of uniform turbidity were obtained. Peptic or tryptic digests of casein were not found superior to hydrolyzed casein, "casamino acids," as the source of nitrogen. The medium finally selected differs from Hornibrook's, especially in decreased amounts of sodium and calcium chlorides, in increased content of soluble starch, potassium phosphate, and magnesium chloride, and in the addition of copper and iron. Also it has been found that the cysteine hydrochloride can be added prior to sterilization.

the starch is dissolved and the medium clear. Filter and dispense in 200 ml. amounts in 1 liter Roux bottles. Autoclave at 10 lb. pressure for 15 minutes.

#### YEAST DIALYZATE

Brewers' yeast (Fleischmann pure dry, type 2019) .....	500 gm.
Distilled water .....	800 gm.
Distilled water .....	2,000 ml.

Make a paste of the yeast with the 800 gm. of water and transfer to a cellophane tube (500-550 mm. length, about 114 mm. diameter, 0.089 wall thickness). Tie each end of the tube with heavy twine, immerse it in the 2,000 ml. of water in such a manner that the liquid cannot spill or seep through the ends of the tube, and adjust its position to give approximate equality of liquid-level inside and outside the tube. Heat at from 78° to 80° C. for 7 hours. Remove the tube and transfer the dialyzate to a bottle. Add 5 ml. of chloroform per liter, stopper with a rubber stopper, and store in the coldroom. This dialyzate is clear, requires no filtration, and remains satisfactory for use even after several months' storage.

Eleven phase-I pertussis strains were cultivated in tubes of the selected fluid medium for four or five successive transfers. Growth was consistently good. The cultures were uniformly turbid or only slightly flocculent. The bacterial counts after 48 or 72 hours' incubation were usually from about 8,000 million to 10,000 million or more bacilli per ml. according to turbidity

#### FLUID MEDIUM FOR *H. PERTUSSIS*

(Casein hydrolyzate medium with yeast dialyzate)

Casamino acids (Bacto), technical .....	10 gm.
Sodium chloride (A.C.S.*) .....	2.5 gm.
Monopotassium phosphate, $\text{KH}_2\text{PO}_4$ (A.C.S.) .....	0.5 gm.
Magnesium chloride, $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ (A.C.S.) .....	0.4 gm.
Starch, soluble, powdered .....	1.5 gm.
Calcium chloride, $\text{CaCl}_2$ (A.C.S.), 1 per cent solution .....	1 ml.
Ferrous sulfate, $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ (A.C.S.), 0.5 per cent solution .....	2 ml.
Copper sulfate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ (A.C.S.), 0.05 per cent solution .....	1 ml.
Cysteine hydrochloride, 1 per cent solution .....	2.5 ml.
Yeast dialyzate .....	50 ml.
Distilled water to make .....	1 kg.

\* A product that meets the standards of the American Chemical Society and bears a label giving the analysis.

Dissolve the casamino acids, salt, phosphate, and magnesium chloride in part of the water. Add the remaining ingredients and make up to 1 kg. Adjust pH to 7.2-7.3. Boil until

measurements. In the course of vaccine preparation, direct counts of cultures grown for 72 hours in 1 liter Roux

bottles indicated that the bacterial concentration was, as a rule, from about 10,000 million to 15,000 million bacilli per ml. No significant changes in phase-I morphologic or cultural characters were noted. Typical hemolytic activity was demonstrated when the last transfers were streaked on sheep-blood potato-infusion agar plates, and with ten of the strains agglutination reactions occurred in high dilutions of a phase-I serum. One strain exhibited reduced agglutinative activity after the third transfer.

#### PREPARATION OF VACCINE

For the preparation of vaccine, strains Nos. 40103 and 41405 were grown separately for 72 hours in the fluid medium dispensed in 200 ml. amounts in 1 liter Roux bottles. The finished vaccine, sterilized by 0.01 per cent of "Merthiolate," contained 10,000 million bacilli per ml., 5,000 million of each strain.

Beginning with a 24 hour culture on potato-infusion rabbit-blood agar,<sup>9</sup> three successive transfers to tubes containing fluid medium were made and incubated at 34°-36° C. for 24 or 48 hours. After tests for purity and identity, including agglutination with a phase-I serum, medium in bottles to provide seed cultures was inoculated and incubated for 72 hours. From 15 to 20 ml. of pure and typical cultures were dispensed into each vaccine bottle. The bottles were shaken by hand once a day during the 72 hours' incubation. After microscopic examination of stained preparations, the cultures were pooled in 4 liter graduated bottles. An additional microscopic examination was made and sheep-blood potato-infusion agar plates streaked with material from each pool. "Merthiolate" in a 1 per cent solution was added to the pooled vaccine to give a final concentration of 0.01 per cent, and the vaccine was stored in the coldroom. The cultures were usu-

ally nonviable after from 2 to 3 weeks.

When a lot of vaccine consisted of more than one bottle of each strain, a sample from one was counted by the Helber counting-chamber method on the day of harvesting and diluted to contain 10,000 million bacilli per ml. This dilution was then used as a turbidity standard in estimating the bacterial concentration of samples from the remaining bottles. The bacterial count of the vaccine cultures was adjusted to 10,000 million per ml., equal volumes of vaccine of the two strains were pooled, and routine sterility tests for diluted vaccines made.<sup>9</sup> Tests for viability of the pertussis bacilli were made at this time and again when the vaccine was dispensed into final containers.

#### POTENCY TESTS OF VACCINE

The immunizing potency of the fluid-medium vaccine for mice was compared with that of the routine material prepared from sheep-blood starch-agar cultures<sup>9</sup> and of a vaccine prepared in a fluid medium of different composition by another laboratory. Mice were injected subcutaneously or intraperitoneally with vaccine, and the degree of immunity induced was estimated from the survival rate following the injection of live culture. In early tests, the vaccinated and untreated control mice were injected intraperitoneally with live culture suspended in mucin.<sup>12</sup> The number of bacilli in the minimum lethal dose (m.l.d.) of the test culture was 50 million or more, and the test dose for the vaccinated mice 200 or 400 million bacilli, or only about 4 to 8 m.l.d. Although an apparently high degree of protection could be demonstrated by this method, the test was not sufficiently sensitive to determine the relative potencies of different lots of vaccine. Furthermore, microorganisms other than *H. pertussis* were frequently recovered from the peritoneal fluid and heart's blood of the mice that died. In later

tests, live culture suspended in broth was injected intracerebrally.<sup>13, 14</sup> The results were in general in accord with those of Kendrick who first applied this method to tests of pertussis vaccines.<sup>15</sup> In order to select suitable test cultures, 20 strains of *H. pertussis* were tested for virulence for mice by the intracerebral method. Four proved to be of relatively high virulence. Fatal infection could readily be induced in mice with doses of from 20,000 to 2,000 bacilli or less of the pertussis strains selected for use in the potency tests, and the comparative potencies of different vaccine preparations could be ascertained with test doses for vaccinated mice of from about 250 to 1,000 or more m.l.d.

*Immunization*—Mice weighing 8–11 gm. were injected subcutaneously at 3 day intervals with 0.1, 0.2, and 0.2 ml. amounts of suitable dilutions of vaccine. In a few tests, the total dosage was given in one injection subcutaneously or intraperitoneally. Ten mice were used for each dose of vaccine or test culture. On the day immunization was begun, a group of mice from the same stock and of the same weights as the mice to be vaccinated were set aside for controls of virulence. A constant total dose of vaccine and varying doses of test culture were used at first. More recently, the doses of vaccine have been varied in order to titrate the amount of vaccine required to protect mice against a given test dose of culture. The total dosage of vaccine for the different groups immunized ranged from 62.5 million to 4,000 million bacilli.

*Injection of live culture*—Seven days after the last dose of vaccine, all the mice were injected intracerebrally, under ether anesthesia, with live culture. Strain No. 40103, or a heterologous strain, No. 44122, was grown for 24 hours on rabbit-blood potato-infusion agar, suspended in broth, filtered through cotton, and diluted to equal in density a Pyrex glass standard representing 10,000 million bacilli per ml. Further serial dilutions of the culture were made as required. The test doses of culture, from approximately 2 million to 10 million bacilli for the vaccinated mice and from 200 to 20,000 bacilli for the control mice, were injected in 0.04 ml. amounts. The mice were observed for 14 days. In those that succumbed symptoms of encephalitis began to

appear after the 3rd or 4th day. Most of the deaths occurred between the 4th and 8th days. Fatalities before the 3rd day were omitted from the calculations of the titers, since they were usually due to injury at the time of injection. While there were some irregularities in the survival rates, the results were in general regular and could be duplicated in repeated tests. Pure cultures of *H. pertussis* were, in most instances, recovered at autopsy from the brains of the mice that died.

The fluid-medium vaccines, in repeated tests by the intracerebral method, were definitely superior in immunizing activity to the routine phase-I vaccine, control and current lots, prepared from blood-agar cultures when the doses of vaccine had been administered subcutaneously. Irrespective of differences in the schedule of immunization of the mice, in the test strains, or in the test doses of culture, smaller amounts of the fluid-medium products than of the routine material were required to induce a given level of immunity. In one of two tests, in which the mice were immunized by a single intraperitoneal injection, the fluid-medium vaccine appeared to be of higher potency than the routine control; in the other, there was no significant difference between the two types. The results of representative tests are recorded in Table 1.

The fluid-medium vaccine prepared in this laboratory also compared very favorably with the sample of fluid-medium vaccine prepared elsewhere. These tests were made prior to the use of the present method of titration of the protective dose of vaccine. However, both in intraperitoneal tests with mucin and in intracerebral tests against varying doses of culture, the results indicated a greater immunizing potency in the vaccine prepared here.

In agglutinogenic activity in rabbits the fluid-medium vaccines corresponded to or exceeded the routine products.

TABLE 1

*Titration of Immunizing Potency for Mice of Pertussis Vaccines Prepared from Blood-agar and Fluid-medium Cultures*

Date Tested	Strains Used in Potency Tests					Type of Vaccine Tested				
	Virulence-control Mice		Test Dose Vaccinated Mice		Method Used in Immunization		Blood-agar Medium *		Fluid Medium †	
	Approximate Number of Bocilli	No. Died	Approximate Number of Bacilli	Total Dosage of Vaccine	Injections		Protective Dose		Protective Dose	
					Route	Number of Bocilli	No. Died	50 Per cent End Point Number of Bocilli ‡	No. Died	50 Per cent End Point Number of Bocilli
Number	No. Tested	No. of Bacilli	Million	Million	Million	Million	Million	Million	Million	Million
1945										
5/17	40103	20,000	10/10	5	Subcu.	3	250	6/10	2/10	
		2,000	2/10		"	3	1,000	7/10	0/10	<250
		200	2/10		"	3	4,000	2/10	1/9	
7/13	40103	20,000	5/5	2	Subcu.	1	62.5		7/10	
		2,000	3/5		"	1	250	10/10	7/10	
		200	2/5		"	1	1,000	7/10	2/10	379
					"	1	4,000	10/10		
8/27	40103	20,000	3/5	10	Subcu.	3	62.5		9/10	
		2,000	3/5		"	3	250	9/10	5/9	
		200	2/5		"	3	1,000	3/10	0/10	252
					"	3	4,000	2/10		
8 30	44122	20,000	2/5	10	Subcu.	3	62.5		9/10	
		2,000	4/5		"	3	250	8/10	4/10	
		200	1/5		"	3	1,000	5/10	1/10	210
					"	3	4,000	1/10		
10 26	44122	10,000	3/5	5	Intraper.	1	62.5	8/8	9/9	
		2,000	3/5		"	1	250	4/9	5/10	276
		400	1/5		"	1	1,000	0/10	1/8	

Note: Test cultures injected intracerebrally.

\* Lot No. 19 except on 10/26, then lot No. 36.

† Lot No. 28 tested 5/17, 7/13, and 8/30; lot No. 23, 8/27; lot No. 38, 10/26.

‡ Calculated by method of moving averages, the span being 2 (data for adjacent dilutions averaged prior to the interpolation).<sup>10</sup>

#### REACTIONS IN PERSONS

Data on the immunizing value of the whole fluid-culture vaccine in children are not yet available. However, some information has been obtained on the reactions induced. We are indebted to Dr. Edward A. Lane of the Westchester County Department of Health for the following observations:

Ninety-three children (75, 3 years old or less) were immunized with the fluid-medium vaccine; 111 (83, 3 years old or less) received the state routine phase-I product. With few exceptions, each child received a total of 8 ml. of vaccine in three injections at weekly intervals. No reactions were reported in 51 (54.8 per cent) of the children immunized with the fluid-medium vac-

cine or in 46 (41.4 per cent) immunized with routine material. The reactions that did occur, local or systemic, following the administration of either type of vaccine were not severe. There was thus no evidence to suggest a greater toxicity in the fluid-medium vaccine.

#### SUMMARY AND CONCLUSIONS

A modified fluid medium based on Hornibrook's formula has been developed which provides satisfactory conditions for the cultivation of *Hemophilus pertussis* in the preparation of vaccine. The addition of copper and iron to the medium was found to stimulate growth, and the optimum amounts of these and other ingredients have been established. Accessory

growth factors are furnished by a yeast dialyzate, and the completed medium can be sterilized by heat. It offers definite advantages over the complex blood agar customarily employed, in that vaccine preparation is simplified and the cost of production lowered.

The whole fluid culture vaccine, according to laboratory tests, appears antigenically superior to vaccine prepared from blood-agar cultures. The intracerebral injection of live pertussis culture in mice previously immunized with pertussis vaccine provided a valuable laboratory procedure for gauging the potency of the vaccine.

#### REFERENCES

1. Hornibrook, J. W. Cultivation of Phase I *H. pertussis* in a Semi-synthetic Liquid Medium. *Pub. Health Rep.*, 54:1847-1851, 1939.
2. Hornibrook, J. W. Nicotinic Acid as a Growth Factor for *H. pertussis*. *Prac. Sac. Exper. Biol. & Med.*, 45:598-599, 1940.
3. National Institute of Health. Communication, May 20, 1942.
4. Leslie, P. H., and Gardner, A. D. The Phases of *Haemophilus pertussis*. *J. Hyg.*, 31:423-434, 1931.
5. Kendrick, P., Lawson, G. McL., and Miller, J. J., Jr. *Haemophilus pertussis*. In *Diagnostic Procedures and Reagents*, 2nd ed. New York. A.P.H.A., 1945, pp. 159-177.
6. Wilson, R. J. - The Production of Phase I Pertussis Vaccine in Casein Hydrolysate Broth. *Canad. Pub. Health J.*, 36:321-326, 1945.
7. Farrell, L., and Taylor, E. M. Notes on the Production of Phase I Pertussis Vaccine in Fluid Medium. *Canad. Pub. Health J.*, 36:326-327, 1945.
8. Verwey, W. F., and Sage, D. An Improved Liquid Culture Medium for the Growth of *Hemophilus pertussis*. *J. Bact. (Soc. Proc.)*, 49:520, 1945.
9. Wadsworth, A. B. *Standard Methods of the Division of Laboratories and Research of the New York State Department of Health*, 3rd ed. Baltimore: Williams & Wilkins. In press.
10. Brewer, J. H., and Cook, E. B. M. A Permanent Nephelometer from Pyrex Glass. *A.J.P.H.*, 29:1147-1148, 1939.
11. Hallinan, F. J. Pyrex Suspensions in Turbidimetric and Colorimetric Determinations. *A.J.P.H.*, 33:137-140, 1943.
12. Silverthorne, N. Experimental Infection with *H. pertussis* and Protection Tests in Mice. *Canad. Pub. Health J.*, 29:233-234, 1938.
13. Norton, J. F., and Dingle, J. H. Virulence Tests for Typhoid Bacilli and Antibody Relationships in Antityphoid Sera. *A.J.P.H.*, 25:609-617, 1935.
14. Ospeck, A. G., and Roberts, M. E. Pertussis Antitoxin: Its Relationship to Protection in Actively and Passively Immunized Mice and Rabbits. *J. Infect. Dis.*, 74:22-31, 1944.
15. Kendrick, P. Personal communications, October 4, 1944, Feb. 7, and Sept. 28, 1945.
16. Thompson, W. R. Use of Moving Averages and Interpolation to Estimate Median Effective Dose. *J. Bact. (Soc. Proc.)*. In press.

## Child Health Day, 1946, on May 1

It has been announced by the National Boys and Girls Week Committee for the United States that the period April 27 to May 4 will be observed as National Boys and Girls Week, with Child Health Day falling on Wednes-

day, May 1. Information about plans and suggestions for carrying out the program, including a poster and a manual of suggestions, may be obtained free of charge from the committee, 35 East Wacker Drive, Chicago 1, Ill.

# The Public Health Nurse in the Department of Health

KATHARINE FAVILLE, R.N., F.A.P.H.A.

*Dean, College of Nursing, Wayne University, Detroit, Mich.*

THE war period was a hard one for the public health nurses who stayed home for, like everyone else, we felt greatly frustrated by the amount to be done and the reduced staff with which to do it. We have learned some valuable lessons, however, that should point the way to improved service in the future. One benefit accruing to us was the fact that, if the nurse was to cover her work at all, she was forced to think in terms of relative values and to ask herself repeatedly:

What type of visit comes first when I cannot make them all?

How much more can families do for themselves?

How much and what can be taught to groups rather than to individuals?

What am I doing that could be done equally well by volunteers or non-nurse employees? (It is interesting to note in passing that, for the first time in some larger cities, public health nursing services during the war have been able to secure adequate clerical assistance, because nurses were unavailable and clerks a little less so.)

In the light of our war experience, I would like to discuss some of the next steps ahead, and what we must do to utilize to best advantage the increased personnel that we hope will soon be available. One does not have to talk with more than a few of the nurses returning from military service to realize that many of them do not want to return to luxury services—they want to work where they are really needed. If we are to attract them to the public health nursing field and hold them

there, we cannot return to the "good old days," but will have to develop a sharp sense of relative values throughout our entire service.

What of the public health nursing services in health departments? What are our urgent problems that need our best thinking today? With one-third of the counties of this country without any public health nursing service in rural areas, with most of our country without really adequate provision for nursing care for those sick at home, with need for almost twice as many qualified public health nurses as are now available if we are to have even the minimum of 1 to 5,000 population, what can we do to give each nurse her right to be of maximum usefulness, to utilize to the limit her knowledge of public health nursing? What is good public health nursing in 1946?

The first principle of public health nursing administration that we teach our public health nursing students is that the total community health program should be viewed as a whole; and that services and agencies should recognize their contribution to that whole, and not, as is so frequently done, carry on their work as though they were independent of it. Moreover, a community health program is a *planned* program, planned by all participating groups under the leadership of the health officer. So far as public health nursing is concerned, the obligation of the health officer does not rest with planning the program of the nurses em-



ployed in his agency—it is to see that *all* public health nurses in his area are brought into the planning, and their work coördinated in the total program. The corollary, then, of this first principle of having the total community health program a planned program, is that the personnel of the department of health must be willing and able to give real leadership.

Planning should have as its objective the development of the best possible service to the community, the elimination of duplication and overlapping so as to meet as many of the health needs as possible, and to stretch the available staff over the most essential services before asking the community for increased funds for increased services. Public health nursing time is the most expensive single item in the budget of the health department, and it therefore becomes a part of wise planning to see that each visit made by a public health nurse is wisely spent and is a planned visit.

If we are to line up our community health needs in the order of their relative importance and attempt to eliminate wasteful visits, where does that land us? The most obvious and outstanding waste is probably found in those communities where public health nurses are employed by both private and public agencies. In cities of average size, at least, we know that multiplicity of agencies means a more expensive administrative overhead cost, more time spent on travel and less in actual public health nursing and, unless very careful planning is done in advance, there results a much less sharply defined program with many essential needs unmet. In 1946, therefore, the challenge to the health officer and the nurse in the health department is first that of bringing about an active community study of the total public health nursing needs, a frank evaluation by all concerned of unmet needs, and a friendly discussion

of what could result from pooled service under unified leadership and administration. Every public health nurse and health administrator should watch with great interest the experiments being conducted in such cities as Minneapolis and Seattle \* where the visiting nurse association and the department of health nursing services have been pooled for an experimental period. The administrators of the Seattle service say in part, "The merger of the private visiting nurse association with the official Health Department in Seattle under a generalized nursing program including bedside care has proved to be a real success. . . . The continued separate existence of the two nursing agencies was both costly and inefficient, so it naturally followed that the two should merge." They describe in detail the ordinance passed by the City Council in order to effect the merger, the terms of agreement signed by the Visiting Nurse Association, the method used to bring all nurses under Civil Service, the retention in the merger of all the interests and assets of both groups. In appraising the results they state, "We made the same number of field visits after the merger as before despite the fact that we always had about one-fourth fewer nurses. . . . The generalized program was found to be more flexible and more productive of results; it eliminated useless duplication and distance of travel. . . . There was no loss in the quantity of work done for the specialized services as so many fear in a generalized program. . . . The educational services of the nursing division to all age groups increased 100 per cent." The Seattle study also describes the method taken to allow for the collection of fees by all of the nurses, and emphasizes the improvement made throughout the entire service as a result

\* Dr. Westman, Health Officer for Seattle, and Miss Prindiville, the nurse director, have written a very helpful article in the *Public Health Nursing* magazine for June, 1945.

of encouraging each nurse to give the complete service in her families.

In this connection I would like to comment on the study of voluntary health agencies recently completed, which in effect recommends that all of those functioning in one community pool their strength to form one voluntary agency under one administration. In my personal opinion, I do not see visiting nurse associations joining in this fashion with other voluntary health agencies, since in the main the latter are not direct service organizations. Instead I believe we will do better to pool our program and service with that of the health department, for as two direct service agencies our interests are much more similar. This is a strategic time, therefore, to be conducting such studies on coördination, and we look to our departments of health to begin them. States like New York for several years have been advocating the development of correlated services, and it has been accepted throughout that state as the policy of the Bureau of Nursing of the State Health Department. In this connection also we can fortify our courage, if necessary, by turning to the statement made by the State and Territorial Health Officers a few years ago and to that on health department functions issued by the American Public Health Association. In essence both believe that it is proper and important that departments of health see to it that home nursing care of the sick be correlated with teaching services.

So much then for our planning to bring all of the public health nurses of a community into a generalized program. Let us now move on to consideration of another principle of public health nursing—that is, that no service, even though generalized, can be stronger than the *intake* policies under which it operates. Too many public health nursing programs do not control their intake policies, but rather are shaped

by them. As a result, the families who know how to use and call the nurses get the service, with little regard as to whether these same families are the types that most need it and can best profit from it. This is very true in the typical visiting nurse association and to a lesser degree in departments of health.

In 1946, therefore, public health leadership involves leadership through group discussions of relative values of types of public health nursing visits. In what groups in our community are our greatest sickness and death rates—by ages, by geographic distribution, by occupations, by income, and by racial groups? To what extent are our nursing intake policies designed to bring these groups and problems to the attention of the public health nurse? Where are our present visits going and how far do they aim at these public health needs? In many communities there is wide discrepancy between basic needs and actual service given. Attempts to correct this difference turn one's attention at once to the rôle of the hospital in the community health program and of its usual omission from it; and point to the necessity for developing nursing service in the community as an entity that unites home and hospital, curative and preventive nursing services, into one total program for the good of the patient. To accomplish this, a system of written referrals back and forth is necessary, which serves to refer types of patients and families automatically, and is not limited to the very occasional referral for an acute social situation when the nurse or doctor happens to remember.

By way of illustration, take the problem of the premature infant and the contribution which the public health nurse can make to its care. Here we have a group with high morbidity and mortality rates, a group to which a very expensive type of care is given while in

the hospital. A Negro pediatrician first called my attention to the waste involved in this care when he stated that in the hospital where his clinic for sick children was located it took less than a month from the time the premature was discharged home until it landed, a sick infant, back in his clinic. And he sagely added that good public health nursing service automatically directed to those homes could largely have prevented this.

We public health planners must be concerned with the *total* care given to prematures, making sure first that the hospital service given is safe and adequate. Next our plan should provide that a public health nurse routinely make a visit to the home of every premature infant before it is discharged from the hospital, and should insure that it will be discharged only when the public health nurse states that the home is fit and ready to receive it. It is extravagant to give weeks of expensive hospital care to a baby, only to discharge it to a home where the older children have a communicable disease or where facilities are inadequate for warmth, or where the mother lacks understanding of how to feed it. Therefore written coöperative agreements secured through joint planning of all groups concerned (medical, hospital, and public health) under the leadership of the health officer and his nurse, must develop a method whereby every such infant is reported at least two days before discharge and final plans are held pending report of that visit. The agreement further should provide that the public health nurse will also visit the day following discharge, and at regular intervals thereafter until the family doctor is sure that the baby and its family are able to make a go of it. Such visits take priority at the top of the list of visits that should be made promptly.

Or let us take children with rheu-

matic fever, who surely need good health supervision from public health nurses following their discharge from the hospital for convalescence at home. What happens on their return home? Is the family correctly interpreting the instructions regarding rest and play? Is the home such that a convalescent routine is possible? A community program for care of such children must include the participation of the public health nurse on an overall planned basis, because of the nature of rheumatic fever itself, not just because of the striking inadequacy of an occasional family.

Since public health nurses cannot give prenatal instruction to all expectant mothers in their area, does everyone concerned understand clearly which types they will follow, for how many visits, and why? Has such a need been discussed under department of health leadership by all the groups involved, a conclusion jointly arrived at, and a written agreement drawn up which insures automatic referral?

An admirable plan for the better distribution of hospital facilities for the United States has been embodied in Senate Bill 191, carrying the approval and support of medical, hospital, and public health authorities. You are familiar with its provisions for the smaller cities and rural areas whereby the hospital and public health programs are coördinated and the health officer given a rôle of community leadership in the total program. While we certainly need a much better distribution of hospitals and many new institutions to give adequate service, it may be some time before we actually achieve them. In the meanwhile, we need not sit back waiting for the hundreds of millions to be made available, for there is an immediate coördinating job to be done whether or not we ever get improved physical facilities—perhaps more needed when our facilities

are poor. The U. S. Public Health Service is proceeding to develop architects' sketches and floor plans for these new projected facilities. Concurrent with this, we in the communities should be developing *our* overall plans for unified *service*. Both blue prints are necessary, but one should not wait for the other.

The original need in health departments for the services of public health nurses to assist in the control of the acute communicable diseases has changed with the years, largely from that of supervising the isolation of sick children to that of reemphasizing preventive measures, family by family, with each new generation of children. The work of the public health nurse in 1946 is becoming increasingly that of persuading families to get medical services *before* they are ill, and of early case finding.

Dr. Shafer in a paper on control of the venereal diseases, has emphasized the shift in relative importance of medical treatment to case finding and follow-up. Here the public health nurse comes increasingly into the program. Moreover, as one studies in 1946 the specific needs of various population groups as shown by a breakdown of local health statistics, the problems of the aging population become distressingly evident. Early case finding in this age group is an obvious need, and the public health nurse's function in the reduction of deaths from cancer, heart disease, diabetes and other organic diseases of the older age group is at once apparent. But we will get little public interest or support for our program if we stop at case finding with this group. With the age of our population increasing, we are having an acceleration of the problem of securing adequate care for the chronically ill, since we have had no corresponding increase in available facilities. Here is a group for whom community planning

cannot be postponed, and no better leadership could be found to initiate such planning than that emanating from the health department itself.

The recent study in New York State of the care of the mentally ill, calls attention to the fact that a large per cent of the beds in state mental hospitals are occupied by types of patients for whom custodial care only is needed. Here is a program set up to care for the acutely ill, being retarded and complicated by this large group of senile patients because no other provision is made for them, while long waiting lists of acutely ill are unable to gain admission.

Connecticut has just completed a state survey of chronic illness among the indigent, and has made a series of recommendations for improvement of facilities for such care. As a nurse I was especially interested in the fact that, included in the plan with recommendations for special types of institutions, were recommendations for an increased number of nursing homes *under adequate medical direction*, and much more home care from public health nurses. The report states that home nursing care can to a considerable extent supplant institutional care if the public health nursing personnel is sufficiently increased. In this connection we should realize that in our communities, as more acute illness is hospitalized, the case load of the average visiting nurse association is weighted more and more heavily with chronic patients; and the well qualified visiting nurse is getting increasingly restless, feeling that in such a program she does not utilize her public health knowledge to the full. She agrees at once that such patients must have home care, that the public health nurse has a responsibility and much to offer in such homes, but she herself asks for some professional variety.

I have not time to go into the use of

the practical nurse in this program and the contribution that she can make if properly supervised. Even with her utilization the function of the public health nurse is evident. From the point of view of the shift in community needs, therefore, the completely generalized nursing program with one nurse to a district intrigues her, offering her as it does the chance to care for all of the public health nursing needs of the family from infancy to old age. And at this point it is unnecessary to remind practical public health administrators that the program which gains the most community appreciation and support is that one which gives the direct service for which the family has an urgent need at the moment. For in such moments a teaching program seems theoretical at best and frequently irrelevant in the light of the urgency for direct care. The success of visiting nurse associations from coast to coast in gaining financial support and the affection of the public is witness to this fact.

We have been discussing the expanding rôle of the public health nurse in the health department when working in a community health program which operates under the recognized leadership of the health officer. Such a program requires that she herself be capable of leadership, in her area acting as the representative of the health department and the public health nursing profession to bring about the most effective use of all resources to meet the health needs of her people. She must have a good scientific knowledge both of curative and of preventive nursing; she must have a practical working knowledge of vital statistics and the epidemiological approach to health problems; she must understand people—normal healthy people of all ages—the deviations caused by illnesses of various types, the problems created by acute mental illness; she must see her

rôle as a part of the group who work to find community solutions to community problems, and who exert the type of leadership in the community which the public recognizes as truly professional. No health officer working alone can deliver professional community leadership—he succeeds in direct relation to the group leadership he creates among his public health personnel. He knows this, and he appreciates that he can move forward only as the members of his group also understand the public health science on which this planning is based. Time is too short for him to be able to go back and teach these fundamentals to his personnel. There is too much wanting to be done. And the fun and challenge of his work is to be found in direct relation to the ability of his coworkers to pick up the ball and carry it along. Professional leadership means professional teamwork.

Therefore, it seems to me we should all be agreed that in 1946 the public health nurse in the health department must be a nurse exceptionally well prepared in public health nursing and public health science. There is no place here for the amateur, for the pace is too swift. At present few schools of nursing pretend to include adequate preparation for public health nursing in the basic curriculum. Minimum preparation, as outlined by the National Organization for Public Health Nursing and the American Public Health Association, consists of a year's university study in public health nursing following the school of nursing work. If the nurse does not now have it, the health officer should see that she gets it as soon as possible. Leaves of absence will be possible as more nurses are available. We look to the bureaus of public health nursing in state departments of health and to the universities to find scholarship and loan funds for those unable to study otherwise. An agency's current

staff education program is good in itself and important, but it cannot replace this essential preparation.

Perhaps the health officer has the right to challenge the public health nursing profession, and especially the universities at this point, and to ask that we place greater importance not only upon the education of the nurse for public health, but upon her selection. If she is to be both nurse and teacher, family health counsellor and friend, she must herself be a mature, emotionally stable person, able to be a loyal, dependable part of the public health team. I admit that many times we have not exercised sufficient selectivity or placed sufficient importance upon these personal qualifications. In the war years some fine nurses, unprepared in public health nursing, have been employed in health departments to fill vacancies made by the demands of military service. These nurses have proved that they have the *personal* qualifications needed for public health work, and it should be our concern that those who wish to remain in the field should now add the professional qualifications which are equally essential for a real career in public health nursing.

I have said that few schools of nursing give adequate preparation in public health nursing, but that does not mean that it cannot be done. We have in this country a number of university schools of nursing, such as those at Skidmore, Vanderbilt, and Yale, whose graduates are prepared to enter the field of public health nursing at staff level without stopping for the additional year of study now necessary for graduates of other schools. Nurse educators badly need the help of all interested members of public health associations to lend support to their efforts to strengthen the basic education of all of

the students in our schools of nursing. All students graduating from schools of nursing should have had experience beyond that of the usual medical, surgical, pediatric, and obstetrical services. As we develop community health programs with the nursing services in hospital and community linked together, as nurses in hospitals utilize their opportunities to teach health and sickness prevention while they give care to the sick, we can see that every nurse must have a good working knowledge of communicable disease and tuberculosis nursing, of the care of well children and of mental nursing. Facilities for these experiences are available in every state if wisely utilized. Public opinion must support our efforts to require such experience for all students, for no community service can be any better than the professional preparation of the group that renders it.

At our annual meetings and in our publications we have had valuable and stimulating discussions of public health measures for control of various types of communicable disease. I am calling attention to the fact that we must have equal concern for the better *distribution* of nursing service, for without it we have no assurance that the nurse will get to the right place at the right time.

In summary then, I would assert that probably no profession today faces greater challenges than does that of public health—and no group has greater opportunities than has the public health nursing group. We, under aggressive, constructive leadership from our health departments, can redistribute the nursing services now available to our communities so that they will give values far beyond those now being given, and through application of our scientific knowledge make our public health dollar pay still greater dividends.

# State Variation in the Collection of Reportable Disease Statistics

ANTONIO CIOCCO, Sc.D., MARGARET D. WEST, AND  
MARION E. ALTENDERFER

*Division of Public Health Methods, U. S. Public Health Service, Washington, D. C.*

THIS paper is presented as the first in a series of studies of the current status of morbidity reporting. In a recent paper,<sup>1</sup> Perrott outlined the important problems of morbidity reporting from the standpoint of national public health activities as:

1. Measurement of the level of under-reporting
2. New methods for getting better coöperation from physicians and institutions which furnish data
3. Selection of diseases to be reported from all states
4. Reporting and recording certain characteristics about the diseases and individuals in order that the data will have greater value as a measure of the state of health of the nation

To analyze these problems, a series of pilot studies in coöperation with state and local health authorities is being conducted. Since the accuracy and completeness of the statistics published by the Public Health Service are related to the methods of collecting and filing morbidity data by the state health departments, this first paper summarizes an inquiry into such procedures.

The need for nation-wide statistics on the incidence and prevalence of epidemic diseases was recognized by law nearly 70 years ago. The National Quarantine Act of 1878 and the 1893 revision authorized the Secretary of the Treasury, who had jurisdiction over the Marine Hospital Service, to obtain reports of cases of infectious or contagious diseases both from state and municipal

health authorities in the United States and from consular offices abroad. An Act of Congress in 1902 made it the duty of the Surgeon General of the U. S. Public Health Service to prepare and distribute forms for the collection and compilation of morbidity statistics and have these statistics compiled and published as part of the health reports of the Service. The Public Health Service Act of 1943 contains a similar provision.

Since 1878, procedures for the collection and publication of national statistics on the reportable diseases have developed through the coöperative efforts of the Public Health Service and the several state health departments. These efforts have been stimulated primarily by the Annual Conferences of State and Territorial Health Officers which have been held since 1903.

As a result of the discussions at these Conferences of the problem of improving morbidity reporting, several important steps have been taken. In 1913, a model state law for morbidity reports and a model notification blank were adopted by the Conference. The model law proposed a list of 41 diseases, in addition to occupational diseases and injuries, to be reported. Since that time a number of states have passed laws based on the model. Over half the states have adopted a reporting card similar to the model notification blank.

In 1914, the Public Health Service appointed collaborating epidemiologists to serve with certain state health de-

partments. Later this plan was extended and assistant collaborating epidemiologists were appointed in local jurisdictions. These persons are agents of the federal government, therefore they are entitled to use penalty envelopes and cards in the collection of morbidity data. This use of penalty mail was a considerable stimulus to reporting, since it saved physicians the trouble and expense of postage. Some ten years later the creation of a morbidity registration area was suggested,<sup>2-7</sup> but such an area has never been set up.

#### REPORTING PROCEDURES

An analysis by Fowler<sup>8</sup> of laws regarding reportable diseases indicates that there is great variation from state to state both in the number of diseases reportable and in the diseases included. The number of diseases reportable (exclusive of occupational diseases) varies from 28 in Virginia to 66 in Iowa. Occupational diseases are reportable in 24 states. Only 12 of the communicable diseases—conjunctivitis, diphtheria, measles, meningitis, poliomyelitis, scarlet fever, smallpox, syphilis, typhoid fever, tuberculosis, undulant fever, and whooping cough—are reportable in all 48 states and the District of Columbia. The average number reportable (exclusive of occupational diseases) has increased from 40 in 1933 to 48 in 1944.

State health departments differ in the organization of their reporting systems and in the procedures followed in the collection of morbidity data. Many of these differences are due to peculiar conditions and needs which prevail in the individual states, and are related to the evolution of the health departments in the states.

In order to study the reporting procedures among the states, information on the formal aspects of their procedures was obtained from the state health officers by means of a questionnaire.

Each state health officer was asked the title of the division or divisions responsible for collecting and compiling morbidity data, the steps taken to evaluate the completeness of reporting, and, for each of 23 diseases, the types of files maintained. In addition he was asked to submit samples of the report, file, epidemiologic and other cards and records used in collecting and maintaining morbidity records.

*Uniform requirements* — There are only two reporting requirements which are uniform in all states: First, every state requires that cases of notifiable diseases be reported by the attending physician or, in the absence of a physician, by a householder, head of family or person in charge of the patient. Second, the reports are to be made to the local health authority. In actual practice, these requirements are frequently not carried out. In effect, therefore, even these procedures vary from state to state.

*Reports received by local health authorities*—There are several basic types of cards used for the physician's report to the local health authority. Seventeen states use the same card for all diseases, 13 have a special card for tuberculosis cases, and 29 for cases of venereal disease. Twenty-seven states and the District of Columbia use an individual penalty card similar to the model notification form. Nine states use a multiple case penalty card. Two states use a stamped card, 3 a card requiring postage, 3 a form other than a postcard, and 4 do not have a regular communicable disease report form.

There is variation from state to state in the items of information on the cards. The name and age of the patient and the name of the disease are the only items included on all cards. The sex of the patient is included on all but 2 of the 45 cards and his address on all but 3. Race or color is asked for on 82 per cent of the cards and the date of



onset on 71 per cent. Approximately three-fourths of the cards call for the name and address of the person reporting the case and the date of the report. A list of the diseases reportable in the state is printed on 76 per cent of the cards. Marital status, occupation, and place of occupation or school are each on less than half of the cards. Data about the household are included on only a few cards. Twenty-six cards have a note to use a special card for reports of venereal disease and 7 for reports of cases of tuberculosis (Table 1).

TABLE 1  
*Analysis of Communicable Disease  
Report Cards*

<i>Items Included on Card</i>	<i>Number of States</i>	<i>Per cent</i>
Total states with cards	45	100
List of notifiable diseases	34	76
Description of patient		
Name and age	45	100
Address	42	93
Sex	43	96
Race or color	37	82
Marital status	9	20
Occupation	14	31
Place of business or school	21	47
Description of household		
Name of head	11	24
Occupation of head	2	4
Number in household	9	20
Number of food or milk handlers	12	27
Description of disease		
Name	45	100
Date of onset	32	71
Date diagnosed	9	20
Source of infection or place contracted	12	27
Person reporting		
Name and date	37	82
Address	32	71
Note to use special card for:		
Venereal diseases	26	58
Tuberculosis	7	16

*Reports received by state health departments*—In most states the original report cards received from physicians are forwarded to the state health department after a record has been made in the local office. In some states, however, these cards are retained by the local health officer and copies or summaries sent to the state health department. A few states require that physicians report cases of certain diseases

both to the local and to the state health officers. An immediate telegraphic report to the state health department, either by the attending physician or by the local health officer, is required by many states for cases of such diseases as meningitis, poliomyelitis, diphtheria, and smallpox. Daily, weekly, or monthly summaries of the number of cases are sent to the state health department by the local health officer in many states.

*Division of state health department receiving reports*—In 11 states all morbidity reports are received, tabulated, and filed in one statistical or preventable disease division. In 3 additional states all the reports are received by a division of preventable disease but are tabulated and filed by a central tabulating or statistical section. Twenty-nine states and the District of Columbia have a separate bureau which handles venereal disease reports. In 16 states tuberculosis reports are received by a special division. Eleven divisions of industrial hygiene and 4 divisions of cancer control receive direct reports.

*Checking of reports*—The reports received by the state health department are checked against death certificates in 35 states and the District of Columbia. In 20 states, reported cases are checked against both death certificates and laboratory reports. In 1 state they are checked against laboratory reports alone. Two states check death certificates for tuberculosis only. A few states also check reported cases against selective service examinations, hospital or clinic records, newspaper reports, or other data. Ten states make no outside checks.

*Filing procedures*—To obtain information as to the types of files used by the state health departments, the following questions were asked about 23 diseases:

1. Is the disease reportable?

- 2. If reportable, are cases reported to the state by name of patient?
- 3. If reportable by name, is there a separate file for the disease?
- 4. If reportable by name, are reports filed alphabetically by name of patient?
- 5. If reportable by name, are individual case records put on punch cards?

Very few states keep uniform files for all diseases. The extent of the variation in the type of files can be demonstrated by an analysis of the systems used for the recording of four diseases which are reportable in all states—diphtheria, malaria, measles, and poliomyelitis (Table 2).

TABLE 2  
*Number of States Using Specified Type of Files*

Type of Files	Polio- myelitis	Diphtheria	Malaria	Measles
Total, disease reportable	49	49	49	49
Total, disease reportable by name of patient	45	39	37	32
Disease separate, alphabetically by name of patient	27	18	20	10
Disease separate, not alphabetically by name of patient	13	12	9	8
Not filed separately	5	9	8	14
Punch card system	17	15	14	12

Alphabetical files for an individual disease are maintained most frequently for serious diseases such as poliomyelitis, and least frequently for childhood diseases such as measles. The majority of the states maintain separate files for cases of poliomyelitis. More than half of them maintain separate files for diphtheria and malaria, but only a third separate the cases of measles.

Punch card systems are used to a greater or lesser degree in 29 states. Eleven of these use the system only for venereal disease records, 6 for special groups of disease, and 12 states use punch cards for all reportable diseases.

DISCUSSION

At present, it is possible to secure nation-wide statistics for only 12 dis-

eases. For each of the other 50 or more reportable diseases no national totals can be arrived at because none of these diseases is reportable in all states. Since the reasons for the inclusion or exclusion of many diseases in the reportable list may be based on historical rather than current epidemiological considerations, critical study of the present state and national reporting requirements would seem to be desirable. A first approach to this problem has been made by Stevick.<sup>9</sup> On the basis of his studies the North Carolina State Board of Health adopted a list of 35 diseases to be reported in that state.

Within the limits of the diseases required to be reported, considerable variation exists among the states in the procedures used in the reporting and recording of morbidity statistics. Many of these variations are such as to affect the completeness and comparability of the statistics, and even the immediate usefulness of the reports received.

1. Much has been made of the value of penalty cards in stimulating reporting. If the effect of their use is significant, then it would be expected that a difference in completeness must exist between states which do and do not use penalty cards. Similarly, differences in completeness may be caused by the use of individual cards in some states and multiple case cards in others. Further study is needed to evaluate the relative advantages and disadvantages of both types of cards.

2. Within the framework of the present reporting requirements there is great variation as to the inclusion of such details as address, sex, and race of patient, date of onset, and name of person reporting the case. In some states part of this information is secured when the epidemiologic follow-up is made. Presumably information should be obtained on the report card to the extent, and only to the extent, that it is of value

in the investigation and control of disease.

Studies on the incidence of disease are of sharply limited value when data on age, sex, race, and date of onset, are not available. At the present time, neither at the national level, nor even in some states at the state level, can the incidence of disease be studied in terms of these very important factors. There seems to be a real question, in the face of the variety which exists, as to the optimum amount of information which should be included in the original reports.

3. The accuracy and completeness of reports may also be affected by the organizational set-up of the state health departments. In some states one division receives all reports, in others separate divisions handle the reports of certain diseases. In the latter case there may be an increase in accuracy if extra checks are made; on the other hand, such gains may be offset by lack of coördination between the units of the health department.

4. Underreporting of cases is known to exist to a greater or lesser degree for all diseases and in all places. Health departments routinely receive death reports, laboratory reports, and other collateral material about illnesses. If these data are checked against morbidity reports, two useful purposes are served—a crude index of the completeness of reporting can be obtained, and at the same time, unreported cases are picked up, increasing the completeness of reporting.

Since these checks are not made uniformly by all states, the net result is probably to intensify existing differences in completeness and comparability of reporting. This is at least suggested by an analysis of the average number of cases of meningitis, poliomyelitis, scarlet fever, and pneumonia reported per death in the 5 year period 1938–1942. The 36 states (including the District

of Columbia) which make a routine check of death certificates reported an average of 38 per cent more cases of meningitis per death, 20 per cent more cases of poliomyelitis, 51 per cent more cases of scarlet fever, and 38 per cent more cases of pneumonia than do the 13 states which make no such check (Table 3).

TABLE 3  
*Relation between Checking Procedures and Ratio of Cases to Deaths*

Disease	Average Cases per Death 1938–1942 for States Which:	
	Check Death Certificates	Do Not Check Death Certificates
Meningitis	3.3	2.4
Poliomyelitis	10.0	8.3
Scarlet fever	231.5	153.1
Pneumonia	2.2	1.6

5. A useable filing system can be one of the most helpful tools of the morbidity reporting system. Separate files by disease and by name of patient make it possible to find and eliminate duplicate reports; and, for chronic diseases, to separate new from recurrent or relapsed cases, or cases coming under the care of an additional agency. Such files also make it easier to use collateral data for checking the completeness of reporting. Here, existing differences in procedures have a real effect on whether reports are of incidence or prevalence, as well as affecting the completeness and accuracy of the reports.

### CONCLUSION

The value of national morbidity statistics hinges on the completeness, accuracy, and comparability of the data emanating from states. A review of the present status of morbidity reporting indicates that the lists of diseases reportable, the amount of information required about each case, and the manner in which the reports are transmitted and recorded have considerable variation from state to state. It follows that the

validity of comparisons among the states may be questioned and an accurate statement of the nation-wide incidence of any reportable disease cannot be obtained.

It is now 32 years since the first comprehensive discussions and recommendations as to the notification of the occurrence and prevalence of certain diseases were made by the Conference of State and Territorial Health Officers. Since that time, reporting procedures in the various states have developed in different ways according to the organization of the health departments in the states. If the resulting experiences of the states were brought to bear on reporting problems, it should be possible to measure the value of alternate procedures and to arrive at those which make for the most complete and accu-

rate reporting of the diseases that are of public health importance today.

#### REFERENCES

1. Perrott, George St. J. Problems of Morbidity Reporting from the Standpoint of National Public Health Activities. *A.J.P.H.*, 35:698-700 (July), 1945.
2. Dublin, Louis I. The Reporting of Disease—the Next Step in Life Conservation. *Pub. Health Rep.*, 29:1611-1619 (June 19), 1914.
3. Lloyd, B. J. A Plan to Establish in the United States a Morbidity Registration Area. *Pub. Health Rep.*, 40:1549-1559 (July 24), 1925.
4. Williams, R. C. A Proposed Plan for the Establishment of a Morbidity Registration Area. *Pub. Health Rep.*, 44:2201-2204 (Sept. 13), 1929.
5. Williams, R. C. The Proposed Morbidity Reporting Area. *Pub. Health Rep.*, 45:1781-1786 (Aug. 1), 1930.
6. Williams, R. C. Development of the Proposed Morbidity Reporting Area. *Pub. Health Rep.*, 46:1289-1294 (May 29), 1931.
7. Williams, R. C. Standardization of Morbidity Reporting and Development of a Morbidity Reporting Area. *Pub. Health Rep.*, 47:2267-2281 (Dec. 9), 1932.
8. Fowler, William. Diseases and Conditions Required to Be Reported in the Several States. *Pub. Health Rep.*, 59:317-340 (March 10), 1944.
9. Stevick, C. P. North Carolina's Reportable Diseases. *A.J.P.H.*, 35:1029-1035 (Oct.), 1945.

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## Massachusetts Develops Blood Program

Geoffrey Edsall, M.D., Director of the Division of Biologic Laboratories of the Massachusetts State Department of Public Health, Boston, has announced that the blood program recently authorized in Massachusetts began operation in December, 1945, when the mobile unit visited five cities and towns in the southeastern part of the state, collecting several hundred pints of voluntary blood donations. Dr. Edsall reports that the department's emphasis is now placed on fractionation of blood to fit the program to the newly released supply from the American Red Cross of Army-Navy plasma. The new laboratory of the department, in Jamaica Plain, is expected to be occupied during April, and in the meantime fractionation is being carried out

on a limited scale with the collaboration of the Department of Physical Chemistry of the Harvard Medical School, Boston.

Plans have been submitted to the Legislature for expansion of the program to include two mobile units so that the state may be covered more effectively and an adequate supply of blood for the needs of the state may be obtained.

Dr. Edsall reports that it is the intent of the department, as soon as blood collections begin to come in on a regular schedule, to undertake the distribution of whole blood on a small scale at first, gradually expanding the service as experience is accumulated in solving the problems which it presents.

# Disinfection of Air by Germicidal Vapors and Mists\*

## Laboratory Section

DURING the past year several studies on the effect of dispersing glycol vapors into atmospheres inhabited by human beings have been published. Certain of these investigations have been concerned only with the bactericidal activity of the vapor, while the others were directed primarily toward determining whether or not the incidence of acute respiratory disease could be diminished by maintaining a constant germicidal concentration of the glycol in the atmosphere.

One study on the effect of triethylene glycol vapor on a single respiratory pathogen, namely, the hemolytic streptococcus<sup>1,2</sup> reported in last year's summary, was extended to include a period of relatively low humidities, i.e., 20 per cent to 30 per cent relative humidity.<sup>3</sup> While the reduction of air-borne streptococci was not quite so pronounced as when the relative humidity was maintained at 40 to 50 per cent (a reduction of 95 per cent occurred under these conditions), the effect was still substantial, being only 15 per cent less at the low humidities.

Another study on the intermittent dispersal of propylene glycol into the atmosphere of a crowded room<sup>4</sup> showed a diminution of 80 per cent in the total bacterial content of the air which lasted for about 15 minutes only. Repeated dispersions of the glycol vapor every 15 minutes resulted in a fairly constant lowering of the bacterial population of the air.

The report of the 3 years' study of the clinical application of the disinfection

of air by glycol vapors in a children's convalescent home showed a marked reduction in the number of acute respiratory infections occurring in the wards treated with both propylene and triethylene glycols. Whereas in the control wards 132 infections occurred during the course of the three winters, there were only 13 such instances in the glycol wards during the same period. The fact that the children were, for the most part, chronically confined to bed presented an unusually favorable condition for the prophylactic action of the glycol vapor.<sup>5</sup>

An investigation of the effect of triethylene glycol vapor on the respiratory disease incidence in military barracks<sup>6</sup> brought out the fact that, while for the first 3 weeks after new personnel entered the glycolized area the disease rate remained the same as in the control barracks, the second 3 week period showed a 65 per cent reduction in acute respiratory infections in the glycol treated barracks. Similar effects were observed in respect to air-borne hemolytic streptococci and throat carriers of this microorganism.

Several Canadian workers<sup>7</sup> made a brief study of introducing propylene glycol into army barracks. They found that bactericidal concentrations could not be employed without condensation of the glycol on the walls, windows, etc. (triethylene glycol is greatly superior in this respect). While the study was not continued long enough to secure any significant data on the incidence of respiratory infection in the test and

\* Referee's report to the STANDARD METHODS COMMITTEE FOR THE EXAMINATION OF GERMICIDES AND ANTIBACTERIAL AGENTS. Committee authorized 1941. Published Reports, *A.J.P.H.*, May, 1943, Aug., 1944, and Aug., 1945.

control barracks, they did find a reduction of air-borne bacteria in the glycol containing atmosphere amounting to 65 per cent as compared with air of the control spaces.

The use of sodium hypochlorite has been further studied as an aerial disinfectant<sup>8</sup> by means of introducing this agent in the form of hypochlorous acid gas. While this vapor has a marked bactericidal action, it requires a high relative humidity, 70 to 90 per cent, for its optimum effect and also exerts a corrosive action on many metals. Its usefulness would seem to be limited to crowded spaces where there is little ventilation and presumably a high relative humidity.

Substances other than those cited above are being studied for their aerial disinfecting properties. A report on the use of lactic acid as a germicidal vapor<sup>9</sup> indicates that this compound exerts a marked lethal effect on air-borne bacteria when employed in concentrations of 1 gram of lactic acid dispersed in 200,000,000 ml. of air or less, approximately the same order of effectiveness as triethylene glycol. The difficulty about employing this agent in atmospheres occupied by human beings is that it has a slight odor.

Progress continues in the development and testing of apparatus for the dispersion of glycol vapors and the control of their concentration in the air. While the principles of such apparatus have been rather satisfactorily worked out, the actual production of dependable instruments has not yet been achieved. Since this is an entirely new field, a great deal of detail has to be learned by trial and error. In respect to vaporizers, there is little to add to the summary of a year ago. Concerning the device for the automatic regulation of glycol vapor in the air, the glyco-stat, more can be said. This instrument has now been calibrated so that variations in the intensity of the

light reflected from the glycol-condensing surface of the wheel can be read directly as corresponding degrees of saturation of the air with the glycol vapor present.<sup>10</sup> Thus the glyco-stat can be set for any desired per cent saturation of glycol in the air, and the vaporizer will maintain this concentration. By means of connecting the glyco-stat with a milliampererecorder we can obtain a continuous record of the per cent saturation of glycol present in the air, which is of course of great value in conducting experimental studies. It has been found that relative saturation of the air with a glycol vapor is of much more significance in respect to germicidal activity than is the actual content in milligrams of glycol per liter of air.

#### REFERENCES

1. Hamburger, M., Puck, T. T., and Robertson, O. H. The Effect of Triethylene Glycol Vapor on Air-borne Beta Hemolytic Streptococci in Hospital Wards. I. *J. Infect. Dis.*, 76:208, 1945.
2. Puck, T. T., Hamburger, M., Robertson, O. H., and Hurst, V. The Effect of Triethylene Glycol Vapor on Air-borne Beta Hemolytic Streptococci in Hospital Wards. II. The Combined Action of Glycol Vapor and Dust Control Measures. *J. Infect. Dis.*, 76:216, 1945.
3. Hamburger, M., Hurst, V., Robertson, O. H., and Puck, T. T. The Effect of Triethylene Glycol Vapor on Air-borne Beta Hemolytic Streptococci in Hospital Wards. III. The Action of Glycol Vapors at Low Relative Humidities. *J. Infect. Dis.* In Press.
4. Challinor, S. W., and Duguid. Propylene Glycol Vapour as an Air Disinfectant. I. *Edinburgh M. J.*, 11:260, 1944.
5. Harris, T. N., and Stokes, J. Summary of a Three Year Study of the Clinical Applications of the Disinfection of Air by Glycol Vapors. *Am. J. M. Sci.*, 209:152, 1945.
6. Birtz, E., Olson, F. C. W., and Jennings, B. H. Epidemiologic Observations on the Use of Triethylene Glycol Vapors for Air Sterilization. *A.J.P.H.*, 35, 8:788 (Aug.), 1945.
7. Mather, J. M., and McClure, A. D. Experiences with the Use of Propylene Glycol as a Bactericidal Aerosol in a R. C. A. F. Barracks. *Canad. J. Pub. Health*, 36:181, 1945.
8. Ellord, W. J., and Van Den Ende, Joan. Studies on Disinfection Action of Hypochlorous Acid Gas and Sprayed Solution of Hypochlorite Against Bacterial Aerosols. *J. Hyg.*, 44:1-14, 1945.
9. Lovelock, J. E., Lidwell, O. M., and Raymond, W. F. Vaporization of Lactic Acid as an Aerial Bactericide. *Nature*, 153:743, 1944.
10. Puck, T. T. To be published.

O. H. ROBERTSON, *Referee*,  
University of Chicago,  
Chicago, Ill.

# American Journal of Public Health

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## A PRAYER FOR IMAGINATION

THE psychology of the United States of America does not present a very heartening picture today. Bulging with food and oozing prosperity, we complain about butter and nylon stockings. Our labor unions strike for higher wages—often with justification relative to rising prices. Our business leaders fight with equal vigor—and less justification—for increased profits. Powerful lobbies attempt to block the vital national housing program and the equally important program of social security.

Our contentious congressmen are—too many of them—concerned only with personal prestige and the defense of special vested interests. They appeal to the basest motives by invoking a violent and selfish nationalism to delay every step proposed for devoting our surplus to the salvation of a starving world. We can only hope for the realization of that most moving of all prayers, "Father, forgive them, for they know not what they do."

We are like Helen Keller at the beginning of her career, with no eyes to see, no ears to hear, cut off from the world in a terrible and blinding isolation of the spirit. May we gain the imagination, as she did, to learn that there are realities beyond the objects which we can touch with our hands.

Statistics from Greece, recently released by UNRRA,<sup>1</sup> may help the public health worker to gain a glimpse of what famine really means—famine such as will again prevail this year if the United States does not awake from its lethargy.

In thirty departmental capitals of Greece, the birth rate in 1940 was 22 per 1,000 and the death rate was 13. In 1942, the birth rate was 12 and the death rate, 37.

For Athens and the Piraeus, where more detailed statistics are available, the general death rate similarly tripled between 1940 and 1942. Though there were no serious outbreaks of acute epidemic disease, the infant mortality rose from 90 to 231 per 1,000 births; and the tuberculosis death rate for 1942 reached 456 per 100,000. Of a total of 41,000 deaths, 17,000 were cases of simple starvation. Analysis of deaths by age-periods showed that the mortality at 50 years of age

was equal to what it was in 1940, at 70 years of age. In 1943, with the influx of relief supplies the death rates returned to normal.

More recent statistics<sup>2</sup> for certain European municipalities show that the infant mortality rates in three large Dutch cities increased by from 132 to 176 per cent in 1945, as compared with 1944; and, in seven French cities, the corresponding increases varied from 24 and 52 per cent in Lille and Paris to 141 per cent and 154 per cent in Nantes and Strasbourg.

These statistics mean something to us who speak the language. Perhaps we can help others to comprehend their significance, in the light of the famine which today threatens many quarters of the globe. We, in the United States have promised 6 million tons of wheat to UNRRA for 1946; and had recently delivered about 3 per cent of that amount, while Canada had already delivered one-third of her quota. The State Department has recently estimated that for every million tons we fall short on our allotment, 20 million people will starve to death. The Food and Nutrition Section of our Association is deeply concerned with this problem. It urges in the strongest terms the importance of general participation in President Truman's program of voluntary rationing. If this fails to meet the need, a return to compulsory rationing would be clearly indicated.

#### REFERENCES

1. *Epidemiological Information Bulletin*, UNRRA Health Division, 1:885 (Dec.), 1945.
2. *Epidemiological Information Bulletin*, UNRRA Health Division, 2:101 (Feb.), 1946.

### THE F. N. S. COMES OF AGE

IN May of this year, the Frontier Nursing Service, with headquarters at Wendover, Leslie County, Kentucky, celebrates its twenty-first birthday.

Mary Breckinridge, the impassioned and indomitable founder and head of this enterprise was of old Kentucky stock and she knew her mountains. She not only knew them, she determined to do something about them. In a region of nearly a thousand square miles, there were three little towns of 200-300 inhabitants. More than 28,000 of the total 29,000 population lived in lonely cabins and shacks scattered along the rivers and up the creeks and branches which cut through the deep canyons of the hills. There were only a few miles of paved road leading to the county seat. All other access was by rough horseback trails. The people (99 per cent "mountain whites") were desperately poor. There were no hospitals, practically no physicians available. It was the American backlands at their very worst.

Mrs. Breckinridge added an English qualification in midwifery to her nursing background. She studied what was being done abroad, particularly by the Highlands and Islands Medical and Nursing Service of Scotland under Sir Leslie Mackenzie. She formed her organization "to safeguard the lives and health of mothers and children by providing and preparing trained nurse-midwives for rural areas in Kentucky and elsewhere where there is inadequate medical service; to give nursing care to the sick of both sexes and all ages; to establish, own, maintain and operate hospitals, clinics, nursing centers, and midwifery training schools for graduate nurses; to educate the rural population in the laws of health, and parents in baby hygiene and child care; to provide expert social service; to obtain medical, dental, and surgical service for those who need them, at a price they can afford to pay; to ameliorate conditions inimical to health and growth and to conduct research toward that end." In May, 1925, she and two other devoted nurse-midwives moved in; and the news spread from Thousand Sticks Mountain



to Hell-for-Sartin Creek that there was something new in the framework of a society that had been untouched by the outside world for two centuries.

Today, the F. N. S. operates a hospital, with 18 beds and 8 bassinets, and three log houses at Hyden, six major nursing centers and five other small clinic centers in various parts of the area. It has in addition to Mrs. Breckinridge, a medical Director, a Dean of the School of Midwifery, and seventeen nurses, including supervisors and staff. It has a research director, a social service secretary and a statistician, besides clerical and accounting personnel and a large group of unpaid volunteers. In the first 20 years of its existence, the service registered 17,358 children and 10,039 adults. It delivered 5,963 babies. It administered 136,604 protective inoculations. It paid 363,432 visits to the home, and registered 434,662 visits to clinics. It gave 71,896 days of hospital care to 7,277 patients.<sup>1</sup>

The F. N. S. has three outstanding achievements to its credit. In the first place, it has demonstrated the extraordinary efficiency of the nurse-midwife in dealing with the problems of childbirth. Out of 6,263 deliveries up to January, 1946, there have been but 6 maternal deaths—a record which can be judged in the light of the fact that in similar regions the maternal mortality rate is nearer 10 than 1 per 1,000.

Second, this program has shown that—given sufficient courage and initiative—it is possible to bring the benefits of modern public health science to the most economically handicapped areas of the American continent.

Third, this gallant enterprise has given to all who know it at first hand, an inspiring lesson in the potential greatness of the human spirit. From Mrs. Breckinridge—who has conceived and planned the job and by her tireless efforts and moving eloquence raised the funds for its support—through the expert staff and down to the youngest volunteer—all have borne trials and overcome difficulties that in prospect seemed insurmountable. Riding the icy trails, swimming the swollen rivers, they have fulfilled their appointed tasks. One nurse died of an appendix ruptured in a wild ride and ignored while she continued her day's work to the end. Another nurse, and the Director herself, suffered horseback accidents which narrowly escaped fatal results. Ernest Poole closes a moving book on the achievements of the Service<sup>2</sup> with this passage: "Garibaldi long ago said to the men of Italy: 'What I have to offer you is fatigue, danger, struggle, with risk of death; the chill of the cold night in the free air, and heat under the burning sun; no lodgings, uncertain provisions, forced marches, dangerous outposts. Those who love humanity and their country may follow me!' The Frontier Nurses are like that."

#### REFERENCES

1. *The Quarterly Bulletin of the Frontier Nursing Service*, Summer, 21, 16, 1945.
2. Poole, Ernest *Nurses on Horseback* Macmillan Co., New York, 1932.

## A NEW FORCE IN THE REFORM OF MENTAL HOSPITALS

THE readers of this *Journal* are in general aware that the status of our public mental hospitals is one of the least admirable aspects of our civilization. The Editor still vividly recalls his astonishment when a national authority in this field praised a certain institution of this type which was known to be overcrowded, undermanned, and operating on a per capita budget far below that of the jails and almshouses of the state. Yet the speaker was no doubt correct in comparing this particular hospital with those of the country as a whole.

The degree of personal understanding to which the mental patient is subjected is perhaps even more important than the quality of the food and the shelter with which he is supplied. As Dr. A. H. Eichert has said, "According to the usual set-up in a modern hospital, attendants are supposed to have the duty of carrying out the doctors' orders, with little of their own personalities entering into the situation. On the other hand, the contacts between the physicians and the patients are so short and few that it is the attendants rather than the physicians who interpret the hospital to the patients." Yet the attendants who occupy this crucial position are almost universally handicapped by low pay, absence of any special qualifications, and complete lack of training for their task.

Into this situation, aggravated by general wartime lack of personnel, there entered 2,000 conscientious objectors, young men of earnestness and, in many instances, of high intellectual and academic qualifications. In 57 institutions, they have fulfilled for four years the tasks of bed-pan carrying, feeding and washing of patients, changing of bed linen, with a faithfulness which alone made it possible to carry on with some degree of efficiency.

They provided, however, much more than performance of routine duties. They thought of what they were doing, they learned to understand it, they realized the fundamental inadequacies of the whole procedure. In 1944, they organized "The Mental Hygiene Program of Civilian Public Service" for the enlightenment of their own members, of the mental hospital attendant group as a whole, and of the general public, upon whose understanding the ultimate solution of this problem must depend. They have avoided all sensationalism, worked with and not against hospital administrators, proceeded slowly and scientifically toward the goal of better care of the insane.

They have a strong legal committee which is studying the legislation of all the states with respect to mental disease and preparing the draft of a model mental hygiene law. They have issued excellent pamphlets describing the work of the mental hospital attendant which can serve as elementary textbooks in the field. They are attempting to acquaint the public with the real objectives and problems of the mental institution by describing in popular form the work of certain selected hospitals.

Since 1944, they have published a monthly journal *The Attendant*—a name now changed to "The Psychiatric Aid."<sup>1</sup> The following titles of articles appearing in recent issues give some conception of its scope: Training Programs for Low-Grade Defectives; A Symposium on Institutional Architecture; A Subjective Account of Electroshock Treatment (by a patient); A Symposium on the Supervision of Patient Crews; and many expositions of the principles of mental hygiene which the attendant should follow in dealing with the patient.

This may well be the dawn of a new day in the management of mental hospitals. Benjamin Rush was a physician, Dorothea Dix, a reformer, Clifford Beers, a patient. Now, for the first time a group of intelligent young men have seen this problem from the inside, have lived and suffered with the patients, as no doctor and no outside reformer can hope to do. They have let light into one of the dark places of the earth. Clifford Beers would have rejoiced in this episode; and it is good that his National Committee for Mental Hygiene stands behind these young men in their important work.

#### REFERENCE

1. *The Medical Post*, 1947, 50, 10: 1374; 1948, 51, 10: 1374.

# BOOKS AND REPORTS

Books of Special Interest to Public Health Workers  
Published in 1944 and 1945

*"For out of old felde, as men seith  
Cometh all this newe corn fro yeer to yeer  
And out of old bokes, in good feith  
Cometh al this newe science that men lere."*—Geoffrey Chaucer

THE two years since the JOURNAL's latest book review edition have been full of ferment in many areas, in public health no less than in others. They have, for example, seen great forward steps in administrative planning, such as the Association's Medical Care Statement and the President's Health Message, the introduction of important federal legislation, such as Senate Bill 191 for the construction of hospitals and health centers, the comprehensive review of voluntary agencies, development of the National Health Reporting Area, and the planning for a nationwide system of local administrative units of economy and efficiency. They have also seen the end of a war in which deaths due to war wounds were amazingly low because of the efficacy of blood plasma, the sulfa drugs, and penicillin, none of which were available during the last World War. Because of this and because of the vast scope of the war itself, the physical and mental rehabilitation of war veterans will increasingly concern the professions.

With the end of the war in mid-1945, renewal of scientific and medical communication with the rest of the world began. Not too much of this communication has yet been reflected in books received, but there is no doubt that the war-torn areas have in the future much to report by way of relevant experience, if only they can be kept alive for the better days when the international exchange of scientific in-

formation is again a part of normal communication.

It is obvious that any selection of books for special mention by any individual or group will, in the words of the Book of Common Prayer, do "those things that ought not to have been done, and leave undone those things that ought to have been done," in the opinion of any other individual or group. This is as true of the present selection as of any other; it is our hope only that the list is both catholic and discriminating; that it does not include unworthy books. It has been selected on the basis of reviewers whose competence has been proved and reflects their opinions rather than those of the authors. Selections have been made from reviews appearing in the 1945 volumes of the *American Journal of Public Health*, *Journal of the American Medical Association*, *Canadian Medical Association Journal*, *British Medical Journal*, *Lancet*, *Journal of the Royal Sanitary Institute*, and *Canadian Journal of Public Health*. Hence, among the selections are books that were published in 1944, as well as in 1945. It should also be noted that the absence of a title is without prejudice. We should be more than human if all that were good had come to our notice and were recognized in their exact place on the scale of excellence.

BIOGRAPHY AND HISTORY  
*Essays in the History of Medicine*

*Presented to Professor Arturo Castiglioni on the Occasion of His Seventieth Birthday* has 25 contributors who, spurred on by their affection for the one honored, wrote quite important essays which they might not otherwise have done. The variety of historical subjects is itself tribute to Dr. Castiglioni's own *Comprehensive History of Medicine*, written in Italian and translated in 4 other languages. Included in the "Festschrift" volume are essays from 7 countries written in 5 languages—the history of colonial hospitals in Spanish America; diabetic diets in the pre-insulin era; medical matters in Marco Polo's book of travels; and Ozanam, the epidemiologist, among others. "This is medical humanism at its best and our modern medical world gains richly from such an alliance of science and letters."

Another volume of "esoterica" is *The Falling Sickness: A History of Epilepsy* from the Greeks to the beginning of Modern Neurology, by Oswei Timken. It is "not merely for the epileptologist but for all physicians and indeed all educated people who wish to increase the depth and the perspective of their knowledge and their sympathies." The author has combed the literature of the ancient and medieval world, sought the opinion not only of noted physicians and university professors, but of village practitioners—even charlatans, of churchmen, and the common man. The result is both a panorama of seizures and a view of the painful progress of medicine—clear, readable, and at times amusing. It has no historical rival and occupies a separate shelf in the reviewer's Library of Fame.

A historical volume of peculiar interest is *Galen on Medical Experience*, the first edition of the Arabic version with English translation and notes by R. Walzer. This restores to the world one of the earliest of Galen's works, the

original text of which has been lost. It makes available one of the best of Galen's treatises and adds greatly to our knowledge of the ancient empirical school of medicine. This book will delight students of medical history, as well as those interested in philosophy and the late Greek writers, and is an easy passport to Galen's mind. *American Medical Practices in the Perspective of a Century*, by Bernhard J. Stern, on the other hand, proclaims its modernity with its sponsorship by a Committee on Medicine and the Changing Order of the New York Academy of Medicine. Inspired by necessary adjustments in the provision of medical care required by "a new medical science called upon to serve a new type of society," it is informative, accurate, and short. The series of which it is a part should exert a great influence in molding public opinion and in educating physicians.

With both antiquarian and current interest, Erwin H. Acherknecht's *Malaria in the Upper Mississippi Valley 1760-1900* is a supplement to the *Johns Hopkins Bulletin of the History of Medicine*. It should prove useful in work with or further study of malaria problems. For the general health worker or the casual reader it gives a vivid and authentic picture of the scourge of malaria during colonization of this area. Primarily factual, it is extremely interesting and informative for him who reads it carefully.

The year brought biographies of two notable pioneers. *A Biography of Julius Tandler*, by Alfred Goetzl and Ralph Arthur Reynolds, reviews the career of a pioneer in public health. As City Welfare Councillor of Vienna after the first World War, Tandler was responsible for the sound and brilliant developments of public health in the Austrian capital. He believed that every individual has a right to health and that the physician should occupy

a position in the social structure similar to that of the judge, teacher, or priest who are supported by society as a whole. Those were fighting words a generation ago. Rachel Baker's story of Elizabeth Blackwell, *The First Woman Doctor*, epitomizes the 100 year history of American women in medicine at the end of which "the contributions and even the indispensability of women in some fields of medical science are unquestioned." This is the simply told narrative of the woman who, as a little girl, decided she would "be something hard" when she grew up.

Two volumes of scientific history have also been high among the years' offerings. *The Autobiography of Science*, edited by Forest Ray Moulton and Justus J. Schifferes, "presents the highlights of scientific progress from the dawn of history to the present," through specific passages from the scientist's writings selected by the editors—"excerpts that are not mere fragments, but well written papers." For those interested in public health there are "two excerpts from anonymous Egyptian physicians, four from Hippocrates, and continuing with highlights in medicine, chemistry, and public health to the present time." Described as a "mental feast" to "be enjoyed by every intelligent layman." Also George Baitzell edited the 4th series of *Science in Progress*, a Scientific Book Club selection. This is a series of reports made by the investigators themselves—not easy reading but full of interesting new approaches and findings. Specially recommended are K. C. D. Hickman's chapter on vitamins for its understanding and as a masterpiece in the use of the King's English, Walter R. Miles's Psychological Aspects of Military Medicine, and the excellent illustrations of Detlev W. Bronk's Structure and Action of Nerve Cells.

Two other books should be mentioned in this category. *The Doctor's Job*, by Carl Binger, the reviewer reports, "is something different" for Dr. Binger "writes about medicine in the tradition of great physicians from Hippocrates to Osler." He helps both physician and patient to understand what the doctor's job is and how he gets it done. There is also *One Hundred Years of American Psychiatry*, the Centennial volume of the American Psychiatric Association. "Now everything about psychiatry in the United States and Europe during the last one hundred years is a matter of record—in a splendidly conceived and beautifully executed, readable historical document."

#### ENGINEERING AND ENVIRONMENTAL SANITATION

Drawing largely upon the studies carried out at the Cincinnati Station of the U. S. Public Health Service, Earle B. Phelps has written a book of timely interest in *Stream Sanitation*. He discusses in successive chapters the life history of a stream, the biology of growth and decay, the aerobic and anaerobic decomposition of sewage, the oxygen balance in polluted streams, and the public health aspects of bacterial pollution. His volume brings together in readable form a large amount of basic information otherwise available only from manifold published sources. A chapter on stream microbiology by the Senior Biologist of the Cincinnati Station, James B. Lackey, is included.

The second edition of *Mosquito Control—Practical Methods for Abatement of Disease Vectors and Pests*, by William B. Herms and Harold F. Gray, and published by the Commonwealth Fund, is an essential book for expert or novice in mosquito control work. The first edition, a comprehensive and practical handbook for public health and mosquito abatement officials, has

been revised and enlarged to include the new techniques of mosquito control which were rapidly developed during the war years.

"The recognition that in medicine as well as in politics and commerce, human relationships have expanded from the international into the global concept" is furnished by *Global Epidemiology*. The subtitle which the authors, Simmons, Whayne, Anderson, and Horack have given it, "*A Geography of Disease and Sanitation*," is more descriptive. This book started in the Medical Intelligence Division of the U. S. Army with the purpose of gathering information of value in planning the health protection and medical care of troops in whatever areas of the world stationed. Later the National Research Council proposed that the original surveys be published. It is an accomplishment worthy of praise to have brought together in orderly presentation this wealth of useful information gathered from diverse sources, many of which are not ordinarily accessible.

#### HEALTH EDUCATION

*The Health Instruction Yearbook*, edited by Oliver E. Byrd, succeeded well indeed in keeping "abreast of the rapidly changing developments and problems in public health, medicine and allied areas." It is not a manual of health education but "offers content and implementation for health instruction digested from current articles in public health and scientific journals." It is intended for public health educators, school health educators, nurses, students, and interested laymen.

Two reports from the Illinois Joint Committee on School Health, *A Basic Plan for Health Education and the School Health Program* and *A Basic Plan for Student Health and Health Education in Teacher Training Institutions*, illustrate the results of coopera-

tive labors such as have gone on in a number of states among workers in the fields of education, medicine and public health, and volunteer services. The Joint Committee represented 29 agencies. Approximately 100 persons served on the committees that prepared the different parts of these reports. "This wide participation is significant and should bring rich dividends in interest and leadership."

#### HOUSING

*An Appraisal Method for Measuring the Quality of Housing*, by the Committee on the Hygiene of Housing of the Association, makes available a new technique for inspecting and evaluating the health qualities of housing which is simple, objective, and susceptible to wide application. It is one of the major contributions to translating opinions into objective measurement in a most difficult field of appraisal. Every health officer should have it and should introduce it to his coworkers everywhere so that all agencies, public and private, should have the same units of measurement in their common purpose of eliminating slums, blighted areas, and substandard dwellings.

#### INDUSTRIAL HYGIENE

A fine book of special interest to many workers in public health is *Lead Poisoning*, by Abraham Cantarow and Max Trumper. The authors have brought together and coördinated the available data on this subject in a logical presentation and fine correlation of the material. There are a bibliography, index, and good cross-references. The volume is highly recommended to all those interested in occupational disease and industrial medicine. On the psychological side of industrial hygiene, May Smith's readable and well rounded *The Handbook of Industrial Psychology* "may well be considered required reading for the man who wants

to do more than issue orders." She boils down in small scope the entire panorama of problems besetting "those who are in some way responsible for others, or who have to get on with others." "There is not a line in her work, obviously the distillation of long research, which does not hew to the line of the common denominator, and which does not live up to its title, Handbook."

The Industrial Hygiene Section of the Association, through a Subcommittee on Chemical Methods, is responsible for the 41 page pamphlet *Methods for Determining Lead in Air and in Biological Materials*. Written by Professor J. Cholak, it reflects the vast experience that the Kettering Laboratory of the University of Cincinnati has had in the estimation of lead when present in minute quantities. This booklet is a valuable addition to the industrial hygienist's library. The bibliography is sufficiently complete so that additional details on any of the analytical methods can be obtained by those who are interested.

#### MEDICAL CARE

Late in 1944 the American Public Health Association adopted its official statement, Medical Care in a National Health Program (*A.J.P.H.* 34:12. (Dec.), 1944) which was hardly less forward looking and trailblazing than the President's Health Message a year later. Germane to this new impetus for a national medical care program is the Farm Foundation's *Medical Care and Health Services for Rural People*, which is a Report of the National Rural Health Conference in April, 1944. Record of a "milestone conference," this is an informal source book on virtually every aspect of the problem for those interested in equal health opportunity for our 57 million rural citizens. Rural shortages of doctors and hospitals are described vividly by those who

have experienced them. An active committee of farm organizations on rural health came out of this conference with a first goal of parity in health services with urban people.

The philosophy of medical care programs is discussed in Franz Goldmann's *Public Medical Care*. Dealing with public medical care as a social movement, it is a "masterful marshalling of material and highly stimulating." It should be interesting to all medical students and practising physicians, and is highly recommended to public health officers, hospital administrators and trustees and students of social security legislation.

#### MENTAL HYGIENE

"Some of the volumes in this field are discussed under History or under Medicine in War Time. Among others Stanley Cobb's *Borderlands of Psychiatry* explores a marginal area that has been despised and disputed territory. This borderland includes about 6,000,000 alcoholics, stammerers, epileptics, psychoneurotics, and others with neurological disorders. With his scientific approach, Dr. Cobb provides a clearer understanding about the millions dwelling in this border region. This book should be invaluable for those public health workers who wish to understand the people they serve. The reviewer slyly says "they will find it helpful even in understanding themselves."

Understanding emotional difficulties through a knowledge of their developmental components is the central theme of *Emotional Hygiene*, by Camilla M. Anderson. It is written in clear, simple language, enriched by illustrations from real life and lightened by appropriate veins of humor. It bears the stamp of a reverent and intellectually honest attitude toward those embarrassingly intimate mysteries of early personality development from which

later spring most of the inadequate emotional adjustments to life. To get the understanding contained in this volume into the popular thought stream becomes an important duty of public health workers.

#### MICROBIOLOGY

The third edition of Martin Frobisher's *Fundamentals of Bacteriology* was published in 1944 in an edition of 824 pages and 398 illustrations. It has been reorganized completely and has newly added material on penicillin, viruses, sulfonamide drugs, among others. Each chapter has a bibliography of recent material which not only covers the details of the text but should stimulate much wider reading. Both Dr. Frobisher and the publisher are to be congratulated on this "well groomed" textbook.

*The Etiology, Diagnosis, and Treatment of Amebiasis*, by Charles Franklin Craig, is timely because of the increased importance of amebiasis during and after the war. No one is better qualified than Colonel Craig to write on this subject. His book, well illustrated with photographs and line drawings, is in excellent format.

In *The Bacterial Cell*, René J. Dubos of the Harvard Medical School, reviews investigations in all relevant fields directed at the nature of the bacterial cell itself. His greatest contribution to the rapidly expanding field of bacteriology is a dynamic and analytic approach, outstanding examples of which are his chapters on staining properties and his discussion of virulence. This monograph is of peculiar value to investigators and students of bacteriology.

Sylvester Gould's *Trichinosis* is the first good monograph on trichinosis since that of Stäubli in German in 1909, and should be of value as a reference book. The excellence of the work leaves little opportunity for criticism.

An extensive bibliography covering the work of other authors during the period from 1822 to 1943 is included, as well as 128 excellently reproduced illustrations. The increased interest in the public health aspects of trichinosis makes this a timely volume.

*Virus as Organism*, by Frank McFarlane Burnet, is highly recommended reading. Here in Harvard University's *Monograph No. 8* of the Dunham Lectures for the promotion of medical science, a visitor from Australia has written a provocative book. He seeks to concentrate attention upon the broad concepts of epidemic disease in terms of the agent involved rather than in minutiae which at present are difficult to interpret. "As far as the doctor, the public health administrator and the biological experimenter are concerned, the pragmatic necessity will remain that virus be regarded as organism—self-reproaching, varying, and surviving like any other living being"—i.e., rather than as an inanimate, crystalline substance.

Of the second edition of Fred Wilbur Tanner's *The Microbiology of Foods*, Friend Lee Mickle says: "The public health official or student cannot afford to be without this exhaustive source of reference material on foods." The earlier book has been completely rewritten in painstaking and critical manner and expanded to include a wealth of material from the modern literature. Professor Tanner has fully accomplished his intention that this be a source book to the literature on foods as well as to methods of analysis. The material is well documented and well indexed in a volume attractively printed in readable type on good paper.

#### PENICILLIN AND OTHER ANTIBIOTICS

A noteworthy accomplishment of the war effort in relation to medicine has been the development of antibiotic therapy. This development is reflected



in a number of books that are valuable in crystallizing what is currently known about antibiotics even though that knowledge may soon be superseded by the findings of further researches. Among the books published in 1945 are Selman A. Waksman's *Microbial Antagonisms and Antibiotic Substances*, an authoritative and comprehensive survey of the subject developed historically and from the viewpoint of a soil microbiologist. He reviews the antagonistic activities of microorganisms with emphasis on their occurrence in nature and their relation to human, animal, and plant diseases, and discusses the chemistry and action of the known antibiotics and their application to the control of disease. The text is scholarly and unusually well documented. A bibliography of 1,016 references is appended. An excellent summary of available knowledge on the use of penicillin and other antibiotics in the treatment of human disease is included in John A. Kolmer's *Penicillin Therapy, Including Tyrothricin and Other Antibiotic Therapy*. It contains a good bibliography of original publications on the theoretical and practical aspects. It is a timely attempt to correlate the current information on penicillin and other antibiotic agents for the medical and dental professions. In a similar category is Wallace E. Herrell's *Penicillin and Other Antibiotic Agents*. In this the author has endeavored, in a concise and lucid text, to summarize the extensive fundamental and clinical studies in antibiotic agents. He divides his book into two parts—a historical survey and the clinical use of penicillin. Each chapter concludes with key references to the literature.

#### PUBLIC HEALTH ADMINISTRATION

The year has seen three significant volumes in public health administration. Together they form a complete trilogy for the administrator. Perhaps the

most important is Haven Emerson's *Local Health Units for the Nation*, which blueprints local health administration for the post-war years. Published by the Commonwealth Fund, which also provided the funds for the study, it is the result of a two year exploration by a subcommittee of the Association into the existing local public health framework and the organizational changes necessary to fit it into a proper vehicle for giving every person in every county of every state at least the basic minimum health protective services he has a right to expect from his local officers of government. The volume suggests that fewer than 1,200 health departments are needed if only the county instead of the town, township, or village, were the recognized administrative unit, if city and county joined in providing service for the entire county, and if thinly populated counties were to join with their neighbors to form a health district serving at least 50,000 persons. More full-time medically trained health officers, more public health nurses, greater professional leadership in public health engineering, dental and health education programs, better planning for laboratory service—all are needed and can be had on at least a minimum basis for one dollar per capita. The third edition of *Health Practice Indices*, by the Committee on Administrative Practice, presents the best yardstick yet devised for measuring the quality of performance of existing health departments. The third volume, Harry S. Mustard's *Government in Public Health*, is both historical and philosophic, and puts into proper perspective the thinking about the relation of government on various levels to the public health of the future. "One could hardly ask," says the reviewer, "for a more informative and thought provoking account of this increasingly important aspect of modern medicine."

## PUBLIC HEALTH AND WAR

Whereas during the early years of the war, books in this classification were devoted largely to preparedness for war eventualities, the later ones that might be classified under this title either sum up the scientific advances made during the war or deal with problems of rehabilitation. Of the first type, the American Philosophical Society in 1944 published a *Symposium on Wartime Advances in Medicine*. In compact form this is an account of important medical advances made during the war. Competent authors cover the subjects of water requirements of castaways, blood derivatives and substitutes, penicillin treatment, advances in the treatment of wounds, immunization in wartime, human problems in military aviation, neuropsychiatry, and trends in the control of infectious diseases. This, with W. H. Taliaferro's *Medicine and the War* in 1944, and Morris Fishbein's *Doctors at War* in 1945, brings up to date, except for the post-war backward look, the interaction of war and medicine that was extensively explored in the 1942 symposium, *War Medicine*, edited by Winfield Scott Pugh.

*Men Under Stress*, by Roy Grinker and John Spiegel, is an "exceptionally well written book on the psychoneuroses precipitated by the stress of military life and aerial combat." "The style and terminology are such that the intelligent layman as well as the physician should be able to read and enjoy one of the most significant books to come out of the war." In *Psychiatry in Modern Warfare*, Edward A. Strecker and Kenneth E. Appel "have condensed a vast fund of information into a well documented and well written book." The nature of warfare in the two world wars is contrasted, and their potentialities as a cause of emotional disturbance, both among civilians and the armed forces. Half of the book is given over to Demobilization and the

Return to Civilian Life. This describes "the change in attitude, orientation, and behavior demanded of the military man when he returns home." There is an extensive and valuable bibliography. On a similar subject, George K. Pratt, Psychiatric Examiner at Induction Centers of the U. S. Armed Forces, in *Soldier to Civilian—Problems of Readjustment*, places primary emphasis "on a realistic recognition that a few neat packages of rules for dealing with the returned service man cannot be presented." What is good advice for one person may be the worst possible advice for another. There is also a valuable appendix on Community Services for Veterans.

## PUBLIC HEALTH NURSING

In this field *Techniques of Supervision in Public Health Nursing*, by Ruth B. Freeman, published in 1944, is perhaps the most important. Her presentation of the philosophy and broad general principles of supervision and its tools is rooted in experience and is penetrating and comprehensive—together a masterly job which deserves recognition in wide and immediate use. Not so directly related to public health nursing but important, nevertheless, is Edith M. Stern's *The Attendant's Guide*, written in collaboration with Mary E. Corcoran and published by the wide-ranging Commonwealth Fund. It supplies, simply and clearly, information about the duties, attitudes, and knowledge expected of an attendant in a mental hospital. It should be read by student and graduate nurses entering the mental hospital for the first time because the knowledge about the behavior of the mentally ill and the conditions surrounding their care will make them better nurses.

## TEXTBOOKS AND NEW EDITIONS

A number of standard works have been published in new editions, making

available the newer knowledge on the respective subjects. One of the most important, from the standpoint of the breadth of its influence at least, is the sixth edition of the Association's *The Control of Communicable Diseases*. This has literally gone around the globe with official imprints of 19 states, agencies and foreign countries, and in several languages, including Siamese. No public health worker should be without it. Another old friend is *Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases*, edited in a seventh edition of two volumes by Richard P. Strong. "If," says the reviewer, "what is here so admirably presented were put to its logical and complete use by each physician as diagnostician and therapist and by the medical officers of civil and military authority, the face of the world would be immeasurably brightened from pole to pole." (This in spite of a number of proofreading errors also mentioned.) "Balance, sense of proportion, freedom from extreme or eccentric attitudes, fairness in presenting conflicting or opposite opinions, and data still disputed on matters of etiology, treatment, and epidemiology, characterize the text throughout."

Still another seventh edition is Asa C. Chandler's *Introduction to Parasitology, With Special Reference to the Parasites of Man*. Written primarily for college students, it is so complete and up-to-date that the medical and public health professions will find it of great value. Although the life cycle, anatomy, treatment, and prevention of parasitic forms are detailed, the broader problems of parasitic existence and general human implications of parasitic diseases are developed from Dr. Chandler's broad biological experience. The style is stimulating and readable.

Public health administrators who are finding it difficult to orient dental health within the field of public health should find enlightenment in the third edition

of *Bacterial Infection With Special Reference to Dental Practice*, by J. L. T. Appleton. "In the field of infection as in no other department of pathology or practice, medicine and dentistry meet on common ground." This book belongs on dental shelves also, for it offers the dentist a working guide in the field of infection.

There is also the second edition of the Association's *Diagnostic Procedures and Reagents: Technics for the Laboratory Diagnosis and Control of Communicable Diseases*. This has grown from a slender manual of microbiological laboratory science as applied to epidemiology to a mature and indispensable guide and reference book. Each of the sections is the well balanced and diligent work of highly qualified specialists whose basic scientific and technical knowledge is fully reflected in the treatment of the subject, and the references are critically selected.

*Manual of Tropical Medicine*, by Thomas T. Mackie, George W. Hunter, and C. Brooke Worth, was produced with the collaboration of the Army Medical School. It provides in an excellent manner a concise statement of the most recent available and authoritative information on tropical diseases. Its wide scope, clear exposition, and excellent illustrations place it in the forefront of the one-volume texts in this field.

Also in this category might be mentioned two year books for their usefulness as sources of varied information not easily obtainable elsewhere. The first is the *Municipal Year Book*, subtitled *The Authoritative Résumé of Activities and Statistical Data of American Cities*, and prepared annually by the International City Managers' Association. The 1945 authors are Clarence E. Ridley and Orin F. Nolting. Its intent is to supply "municipal officials with discussions of the current problems of cities, facts, and statistics

on city activities, and analyses of trends by population groups." Its annual public health summary brings together much interesting material on municipal public health matters, the 1945 data having featured city-county health units in the various states. The other is the *Social Work Year Book*, prepared annually by the Russell Sage Foundation under the editorship of Russell H. Kurtz and an advisory committee broadly representative of the various phases of health and welfare. The 1945 edition includes 75 topical articles discussed both historically and currently by 74 authors. Among the topics of most immediate interest to public health workers are Housing and City Planning, Maternal and Child Health, Medical Care, Mental Hygiene, Public Health, Public Health Nursing, Social and Health Work in the Schools, Social Hygiene, Social Insurance, and Tuberculosis. The directory, including a thumb-nail sketch, of national agencies—70 governmental and 402 voluntary—is also invaluable reference material.

#### TUBERCULOSIS

For tuberculosis workers, Dr. Max Pinner's *Pulmonary Tuberculosis in the Adult* is a "must" book. Among its special delights are extensive quotation from European literature; a critical attitude toward many conclusions and dogmas; a bibliography with extensive chapter references; a succinct statement of the author's main theme and often an evaluation of the work. He succeeds in his purpose "to create understanding, to form rational and consistent attitudes and approaches to the problem as a whole, to provide the basically necessary foundations on which the practical work should proceed." Ruth Puffer's *Family Susceptibility to Tuberculosis* is important in that it directs the attention of the health officer to a group often over-

looked in case finding, namely, siblings of the active tuberculosis sufferer, whether or not they live in the same household. *Mass Radiography of the Chest*, by Herman E. Hilleboe and Russell H. Morgan, covers all phases of mass x-ray surveys from the preliminary planning to the study and care of persons found to have x-ray evidence of pulmonary disease. The book should serve as an excellent reference source for public health workers.

The National Tuberculosis Association has continued its volumes on *Tuberculosis in the United States: Graphic Presentation*. In 1944 Volume 2 appeared "to provide a base-line for the study of changes in tuberculosis mortality by means of proportionate mortality," using the same basic material as the 1943 volume on mortality statistics in states and geographic divisions by age, sex and race. In 1945, Volume 3 presented the mortality statistics for large cities in the same detail. These studies are a practical contribution in the daily fight against the disease.

#### VITAL STATISTICS

*Manual of Coding Causes of Illness According to a Diagnosis Code for Tabulating Morbidity Statistics*, by the U. S. Public Health Service and the Bureau of the Census, "is the most important step so far made in our country towards responsible uniform comparable morbidity data." It will increase the "distinction and influence of the United States" at the next International Conference on Certified Causes of Death and Diseases to be held in 1948. It is "in as nearly perfect technical and textual form as possible, what all hopeful devotees of systematic morbidity reporting have awaited these many years." From the well known English statistician, R. A. Fisher, comes the standard classic for biological statistics, *Statistical Methods for Research*

*Workers.* Its simplified presentation is valuable not only to laboratory workers, but also to clinicians who would draw conclusions from any series of cases.

Another valuable reference book is *Handbook of Statistical Reference Data By District and Health Area 1931-1940*, compiled by Marjorie T. Bellows, Godias J. Drolet, and Harry Goode, and published by Neighborhood Health Development of New York. Although these are localized data (pertaining to New York City only), the volume gives health workers everywhere a clue to the kind of facts they must work with if they want to go about the task of improving community health intelligently and want to know whether they are getting results. Accurate diagnosis of health problems and application of correct remedies are based upon such data as are shown in this handbook.

#### VOLUNTARY HEALTH AGENCIES

The year 1945 produced two notable books dealing both historically and philosophically with voluntary agencies. The first to be published, Harold M. Cavins' *National Health Agencies*, extracts from dusty records and from the memories of the few who remain, with conciseness, vividness, and the human touch, the significant events in the

origins of 10 national health and four professional voluntary health organizations. Included are thumb-nail sketches of 82 national agencies interested, though not always exclusively in health. The second is one of the books that once in a generation start a movement that eventually radically changes the social architecture. *Voluntary Health Agencies*, by Selskar M. Gunn and Philip S. Platt, is the result of a three year study made under the auspices of the National Health Council under grants from the Rockefeller Foundation. It takes apart the national health agencies and their 20,000 local counterparts and suggests how their mechanisms could be integrated and coordinated to avoid the present results in many instances in "conflict between agencies, confusion of the public, an unbalanced community program and a deplorable lag in meeting emergent needs." It recommends the strengthening of the National Health Council for strategic planning among the national agencies, and on the local level, "one centralized, unified, voluntary health agency with one board and one executive, with special committees and staffs to direct the work of special divisions—tuberculosis, visiting nursing, mental hygiene, safety, etc."

**Pulmonary Tuberculosis—By R. V. Keers, M.D., and B.G. Rigden.** Baltimore: Williams & Wilkins, 1945. 273 pp. illus. Price, \$5.00.

The authors have drawn on their experiences as medical staff members in English sanatoria to prepare this handbook for students and practitioners, and have brought together a very good clinical presentation of pulmonary tuberculosis. While the book is designed for the student and the general practitioner, it would also serve very well as a guide to the sanatorium physician.

English practice in the field of pulmonary tuberculosis as portrayed in this book is not strikingly different from American procedure.

The classification of tuberculosis used divides pulmonary tuberculosis as:

1. Primary Tuberculosis.
2. Post Primary Tuberculosis.
  - a. Haematogenous Dissemination.
  - b. Isolated Pulmonary Tuberculosis.

Reinfection, which term Americans would apply to Post Primary Tuberculosis, is a term the authors reserve for exogenous reinfection only and use

endogenous exacerbation to apply to lesions developing from endogenous sources rather than saying endogenous reinfection.

A short chapter at the end of the book on "Tuberculosis as a National Problem" seems all too brief. It would seem to have been highly desirable to bring the public health aspects of tuberculosis into the book earlier and more extensively as they relate to epidemiology and other phases of pulmonary tuberculosis so that the student and the practitioner might continuously have the public health and preventive viewpoint before them.

The American sanatorium physician will find the outline of sanatorium care of patients of definite interest.

BRUCE H. DOUGLAS

*Men Without Guns—By DeWitt MacKenzie. Captions by Major Clarence Worden. Foreword by Major General Norman T. Kirk. Philadelphia: Blakiston, 1945. Text 47 pp., 137 illus. Price, \$5.00.*

No more valiant contribution was made to victory in World War II than that of the men without guns, the officers and enlisted men of the Medical Department of the United States Army. This book is a literary and pictorial review of some of the most noteworthy of their achievements. It consists of 47 large pages of descriptive matter, divided into 8 sections, concerned with the medical corpsman; the doctor; actions in the Southwest Pacific, Saipan, Italy, Normandy, and the Burma Road; and rehabilitation of the wounded. This is followed by 137 paintings by a dozen artists, a collection sponsored by Abbott Laboratories. For each of these Major Worden has written exciting descriptive captions. The book, which is very well printed, is a fascinating review of the dangerous, heroic work of the medical officer and soldier. It should be of interest not only to medical veterans of

the World War, but to doctors, nurses, and veterans generally.

JAMES A. TOBEY

*Hidden Hunger—By Icie G. Macy, Ph.D. and Harold H. Williams, Ph.D. Lancaster: Jaques Cattell Press, 1945. 286 pp. Price, \$3.00.*

In spite of its sensational title and subtitle, this book is an accurate, semi-scientific presentation of a vast fund of information condensed into one volume.

The text differs from most books on nutrition in that it covers a much greater variety of topics than the majority of books of this kind. The wide range of subjects covered has necessarily precluded as thorough a treatment of many topics as might be desirable. Further, the frequent and lengthy quotations in fine print detract from the continuity of the central theme and effectivity of the book. However, it does bring into a single volume a diversity of information, which will be of value to those who are interested in the broad aspects of the field of nutrition.

The authors introduce a novel approach to the presentation of this kind of material by including accounts of the origin of this science, the founding of the different professional organizations, and scientific journals and the publication of some of the earliest texts concerned with nutrition.

The nutrients known to be essential for normal nutrition are considered, as is the malnutrition resulting from diets inadequate in these food constituents. The relationship of a variety of sciences, as bio-chemistry, physiology, medicine, etc., to nutrition is pointed out and the progress already made toward alleviating nutritional deficiencies is described.

Considerable space is devoted to the selection of foods and their uses; food habits, facts and fashions; fortification and enrichment; food preparation, preservation and processing; and food production, supply, and consumption. The

feeding practices of the Armed Services and industrial workers during World War II are discussed, as are the recommendations for adequate nutrition established by the White House Conference in 1930, the League of Nations, the 1941 National Nutrition Conference, and the Conference of the United Nations on Food and Agriculture. Some of the recent advances which should aid in promoting improved nutrition in the peoples of the future are described. The text is generously documented with references which add to the usefulness of the book for the general student.

ELSA ORENT KEILES

Annual Report of the Federal Security Agency. Section 4—U. S. Public Health Service—*Washington: Government Printing Office, 1945. 156 pp. Price, \$.30.*

The U. S. Public Health Service, as everyone knows, has moved into new ground in the last decade, but it will surprise even the well informed to read this report and to appreciate its inclusiveness. The Surgeon General reports that during the war the nation's health did not lose ground but he maintains that "such passive maintenance of present health standards is not enough. In the peaceful years ahead, we must take up aggressively the task of improving the people's health."

Dr. Parran expects that during the reconversion period problems comparable in scope and extent with those of the war may be expected to arise. Among the recommendations of this report special emphasis is laid on building up all public health services with well trained personnel for every community in every part of the country; the addition of cancer control programs and dental care to traditional public health services; the establishment of mental health programs at the community level; the inclusion of bedside care as a part of the visiting services of all public

health nursing programs; and the continuation by states and communities of the environmental sanitation work which has been carried on during the war through federal appropriations. "It is now time," says Dr. Parran, "to set our sights for the broad objective—the attainment of complete health and medical service, of high quality, in all parts of the country. We must move forward rapidly toward this goal—doing more of what we have been doing and doing it better; shaking the dust out of our traditions; accepting the new . . ."

It is a wholesome experience to read this story of a dynamic service, and the experience should cancel out fears subtly planted that an expansion of the responsibilities of the Public Health Service is something to be dreaded.

REGINALD M. ATWATER

*Textbook of Obstetrics—By Henricus J. Stander, M.D. (3rd ed. rev.) New York: Appleton-Century, 1945. 1287 pp. 973 illus. Price, \$10.00.*

This handsome textbook represents the 9th edition of *William's Obstetrics*. Although this is Stander's third revision, it is the first time that the title page of William's has been changed to indicate the real author. Now it is as it should be, for the text is the obstetrics taught at Cornell where Stander is Professor of Obstetrics and Gynecology. The general plan of the book is new, with substitution of section and page headings for the traditional chapters.

Discussion of abnormal pelves and puerperal infection is unusually complete. Toxemia of pregnancy is well covered, but of course there is nothing new, except that "low reserve kidney" is just mentioned.

Stander has not been swayed by Watson's recent indictment of the Voorhees bag, nor impressed by Irving's experience in the management of abruptio placentae.

Cesarean section is thoroughly dis-

cussed. Cyclopropane and ethylene for anesthesia are preferred over local infiltration, and the safety of spinal anesthesia is said to be dubious. It is the practice at Cornell to sterilize the patient at the third cesarean section, though it appears that, at earlier operations, the patient's wish is of great importance.

Stander's book is excellent for students of obstetrics, whether undergraduates or specialists. It is highly recommended.

CHARLES A. GORDON

*The Psychology of Seeing—By Herman F. Brandt, Ph.D. New York: Philosophical Library, 1945. 240 pp. Illus. Price, \$3.75.*

The experimental findings in ocular photography of the Visual Research Laboratories, Drake University, Des Moines, Iowa, are reported in detail by the author, Professor of Applied Psychology and Director of the Laboratories. By means of a new bidimensional camera the eye movements of a subject are objectively recorded as dots (fixation points) on motion picture film which is subsequently projected on a field equivalent to the pages originally observed. An eye pattern, indicating the duration, location, and sequence of every fixation, as well as the distance, direction, and frequency of every excursion or eye movement, is thus established. A large body of repeated, controlled experiments on thousands of subjects has resulted in new evidence for the interpretation and evaluation of visual perception and of the working of the human mind.

More than half of the book is devoted to the application of these findings to the fields of advertising, learning, and art. The treatment, while interesting and suggestive, does not impress the reviewer as sufficiently convincing, despite the statistical techniques employed.

The chapter on "Projected Studies

and Their Applications" suggests the possibilities of ocular photography in measuring visual acuity, illumination effects, crime detection, personality, intoxication, aptitude, and efficiency. In spite of his enthusiastic belief in ocular photography as a scientific method of studying the human mind and its behavior the author asks acceptance only of such postulates as can be verified by painstaking research.

It is regrettable that the attention of the reader is so constantly distracted by the faulty typography and that so many of the 88 illustrations are wretchedly reproduced. The glossary and index are excellent.

PHILIP S. PLATT

*Guide for Parents of a Preschool Blind Child—By Gertrude Van den Broek. New York: State Department of Social Welfare, Commission for the Blind, 1945. 48 pp.*

The New York Commission for the Blind has maintained over a period of years a preschool service to parents of blind children. The experiences resulting from intensive study and training of preschool blind children in their home environment under the direction of Gertrude Van den Broek have been garnered by her and offered in a *Guide for Parents of a Preschool Blind Child*. The information given is expressed with rare sympathy, freedom from sentimentality, yet with complete scientific accuracy and soundness. Any parent, teacher, doctor, nurse, or older person in contact with blind children will have a keener interest in and a more assured and understanding approach to their needs after a thoughtful reading of this booklet. It is enriched by a final chapter "What to Expect of Your Child" from his first to his sixth year, and a list of books for both parents and children. This unique and welcome guide may be obtained from the Commission for the Blind, New York State Depart-



ment of Social Welfare, 205 East 42nd Street, New York 17, N. Y.

DOROTHY DEMING

**Vapor Adsorption**—By *Edward Ledoux*. Brooklyn, New York: *Chemical Publishing Company, Inc.*, 1945. 360 pp. Price, \$8.50.

In this book literature on adsorption from widely scattered sources has been compiled and coordinated. Parts I and II deal with thermodynamics of air-vapor mixtures and with adsorption equilibria (static adsorption). These are prerequisites to a clear understanding of dynamic adsorption which follows in parts III and IV. Among important applications discussed in detail are dehydration of gases, particularly air, for comfort air conditioning, or for

industrial purposes by the use of silica gel or activated alumina. Absorption of water vapor with calcium chloride and condensation of vapors by refrigeration are also discussed as competing processes in special cases.

Separate chapters are devoted to conditioning of underground storage rooms and gas-proof shelters, drying of hygroscopic materials and optical instruments, dehydration of compressed air, and to recovery of vapors from air or other gases in process industries.

Although the book should appeal especially to chemical and air conditioning engineers, it should also be of value to industrial hygiene engineers who are concerned with removal of toxic, inflammable, or valuable gases from air of industrial rooms. C. P. YAGLOU

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**Promising Foreshadow**—In a huge sampling of the American population, the 1945 health record—aside from war losses—was excellent, the death rate being 2 per cent better than 1944. Expectation of life at birth is computed to be 65 years, a gain of 18 years in a third of a century.

ANON. War, Peace, and National Mortality. Stat. Bull. (Met. Life Ins. Co.), 27 1:1 (Jan.), 1946.

**And Grim Reminder**—Tuberculosis is still a major concern of public health even though the deaths dropped from a 5 year average of 60,000 per year to the middle 50,000's in 1944. The overall death rate declined 3 per cent from the 1943 rate but there were states in which whopping rises were reported.

ANON. Tuberculosis Mortality in Each State. 1944. Pub. Health Rep. 61, 5:144 (Feb. 1), 1946.

**Pre-Atomic Records**—How the 10 million casualties of the most destructive war (so far) are assumed to be divided among the belligerents constitutes dreadful evidence that aggression doesn't pay these days. The Germans are supposed to have suffered the greatest losses—3½ millions.

ANON. Military Deaths in World War II. Stat. Bull. (Met. Life Ins. Co.), 27, 1:6 (Jan.), 1946.

**Public Un-Health**—First hand account of France's "occupation disease," the result of famine, fatigue, deportation, pestilence, and filth, from the pen of a professor of medicine who survived them all. The country had little insulin, no glycerin or petrolatum, and all the physicians knew about penicillin was what they heard over the radio.

BESANCON, L. J. Public Health in France from the Invasion to the Liberation. War Medicine 8, 5:283 (Nov.-Dec.), 1945.

**Topic for Controversy**—If your particular job has any concern whatever with rheumatic fever, then you'll surely want to read these two lectures. If you have only a casual interest you'll find them formidable going. The term "rheumatic infection" may be a misnomer, for rheumatic fever may be a biochemical reaction of man, postulates the lecturer.

COBURN, A. F. The Rheumatic Fever Problem. *Am. J. Dis. Child.* 70, 5:339 (Nov.-Dec.), 1945.

**"Let Us Not Be Weary of Well-Doing"**—More evidence, if more is needed, that diphtheria immunization continues to pay extra dividends. With an epidemic producing a million cases a year in Continental Europe, England and the United States were spared, and in this country the rates were lowest where immunization was most nearly complete.

COLLINS, S. D. Diphtheria Incidence and Trends in Relation to Artificial Immunization, With Some Comparative Data for Scarlet Fever. *Pub. Health Rep.* 61, 7:203 (Feb. 15), 1946.

**Is Influenza an Epidemiologic Brother to Measles?**—In this not-to-be-missed paper, four points are discussed: agents which produce epidemics, possibilities in forecasting, survival between epidemics, and the mechanisms of periodicity. Even if it were possible, we would not attempt to epitomize the answers here. The jingle penned by Pope (Alexander, 1688-1744; not Alton).

"How index-learning turns no student pale  
Yet holds the eel of science by the tail,"

cannot be applied to these annotations.

COMMISSION ON ACUTE RESPIRATORY DISEASES. The Periodicity of Influenza. *Am. J. Hyg.* 43, 1:29 (Jan.), 1946.

**That Lingering Doubt**—In a three county rural New York State district, 591 cases of poliomyelitis were studied. The results emphasized for the writers

that the accepted person-to-person mode of spread is based on weight of evidence, *but* some of the reported observations do not fit too well into the contact theory. The epidemiologists wish they might have had the benefit of a public health virus laboratory.

CONWAY, J. A., and BIGWOOD, D. E. Observations Made during a Poliomyelitis Epidemic in 1944 in the Hornell State Health District, New York. *New York State J. Med.* 46, 3:275 (Feb. 1), 1946.

**Have We Schafered after False Gods?**—Experience with two apneic patients casts serious doubt upon the efficacy of the Schafer method for producing artificial respiration. The tilting table method resulted in better ventilation of the lungs.

COMROL, J. H., and DRIPPS, R. D. Artificial Respiration. *J.A.M.A.* 130, 7:381 (Feb. 16), 1946.

**Our British Brethren Face the Facts**—Assuming that the British Labor Government will take away the hospitals and clinics from the public health officials, will there be anything left for them to do? Well, yes, concludes this M. O. H. after some dismal speculation. The public must not be led to believe that health depends on hospitals or doctors or bottles of medicine, he quotes (in effect). Sanitation, housing, freedom from industrial hazards, recreation and education are what count most. So, the aggrieved health officer will still have plenty to do to keep him out of mischief whatever His Majesty's Government puts over on him.

JERVIS, J. J. Has Public Health Any Future? *Pub. Health* 59, 4:46 (Jan.), 1946.

**More Polio Research**—There is room for two schools of thought, assert these writers, one postulating the transmission of poliomyelitis exclusively through human contact, the other holding that extra-human reservoirs of virus exist. Though these researchers have

delved diligently into the possibility of animal vectors—their present work was concerned with house mice—they are led to the conclusion that evidence favors the direct human transmission of the disease.

JUNGBLUT, C. W., and DALLDORF, G. Epidemiological and Experimental Observation of Poliomyelitis in New York City, (1943-1944). *Am. J. Hyg.* 43, 1:49 (Jan.), 1946.

**Not Copyrighted**—Of bright new British coinage is the appellation, "indoor storms" for the pollution of confined air with invisible showers of germs—sneezed and coughed. There is little new in the article about the prevention of spread of indoor infection except the very original title. Incidentally, administrators hereabouts would be mildly amused by this number of the *Health Educational Journal* if they could see it. The first paper entitled "Health Education" covers such divers matters as dental, prenatal, and mental hygiene clinics, social medicine, and mass feedings. Bemused administrators may wonder what is left in the whole field of public hygiene when the health educator is done.

MITMAN, M. Indoor Storms. *Health Educ. J.* 4, 1:21 (Jan.), 1946.

**Dental Note**—If lactobacilli and acidogenic cocci break down carbohydrates to destroy tooth enamel, then why not immunize the body against these germs? Repeated injections of vaccines made of these organisms were given to rats with what effect, do you suppose, on the numbers of the same germs found in the crypts of the rat's teeth? This time we'll save you trouble: the vaccines did not discourage the bacteria.

PARSONS, E. L., et al. The Effect of Immunization against Lactobacilli and Acido-

genic Cocci on the Tooth Flora of the Rat. *Am. J. Hyg.* 43, 1:41 (Jan.), 1946.

**It's High Time Department**—If motion pictures have a place in mental hygiene, as this report upon military experience suggests, then films most certainly have an educational job to do in the other fields of public health, a job which—so far as I know—is being ignored masterfully by most established health agencies.

ROME, H. P. Motion Pictures as a Medium of Education. *Ment. Hyg.* 30, 1:9 (Jan.), 1946.

**Child Health from the Business End**—Herein is reported a British study of problem mothers, a problem mother being one who gives her children less than minimal care and refuses to cooperate with professional guidance. There were 89 among 7,215 families with one or more pre- or elementary school children. The children who survived this maternal neglect were discovered to be lousy, ill-fed, and retarded in school, and it was found further that the infant mortality rate was directly related to the intelligence of the mothers.

SAVAGE, S. W. Intelligence and Infant Mortality in Problem Families. *Brit. M. J.* 4437:86 (Jan. 19), 1946.

**Good Red Blood**—Our recent preoccupation with vitamins and minerals has tended to overshadow the subject of proteins. Now that good sources of protein foods are in short supply we begin—happily—to take a renewed interest in the factor which has so much to do with maintaining health. Three papers discuss in turn, clinical aspects, methods of securing high protein diets, and the use of food yeast as a supplement.

TUI, C. Some Clinical Aspects of Protein Nutrition (and two related papers). *J. Am. Dietet. A.* 22, 2:97 (Feb.), 1946.

## BOOKS RECEIVED

- THE ABC'S OF PUBLIC RELATIONS FOR RECREATION.** A Primer for the Recreation Worker. New York: National Recreation Assn., 1946. 64 pp. Price, \$85.
- AN INTRODUCTION TO ESSENTIAL HYPERTENSION.** By Richard F. Herndon, M.D. Springfield, Ill.: Thomas, 1946. 88 pp. Price, \$2.50.
- BETTER HEALTH FOR RURAL AMERICA.** Plans for Action for Farm Communities. Inter-bureau Committee on Post-War Programs, U. S. Dept. of Agriculture. Washington, D. C.: Gov. Ptg. Office, 1945. 34 pp. Price, \$20.
- BURMA SURGEON RETURNS.** By Gordon S. Seagrave, M.D. New York: Norton, 1946. 268 pp. Price, \$3.00.
- DISABILITY AMONG GAINFULLY OCCUPIED PERSONS.** An Introduction to Disability Insurance Statistics. By I. S. Falk, Barkev S. Sanders and David Federman. Washington, D. C.: Bureau of Research and Statistics, Social Security Board, 1945. Bureau Memorandum 61. 60 pp.
- THE FALLING SICKNESS.** A History of Epilepsy from the Greeks to the Beginnings of Modern Neurology. By Owsei Temkin, M.D. Baltimore: Johns Hopkins Press, 1945. 380 pp. Price, \$4.00.
- A GUIDE FOR NURSES IN THE NURSING CARE OF PATIENTS WITH INFANTILE PARALYSIS.** New York: National Foundation for Infantile Paralysis, 1945. 29 pp. Free from publisher, 120 Broadway, New York 5, N. Y.
- GUIDE FOR PARENTS OF A PRESCHOOL BLIND CHILD.** By Van den Broek. New York: N. Y. State Dept. of Social Welfare, Commission for the Blind, 1945. 48 pp.
- HANDBOOK FOR NURSES—DISASTER PREPAREDNESS AND RELIEF.** Washington, D. C.: American National Red Cross, 1945. 62 pp. Free from publisher, 17th and D sts., N.W., Washington 15, D. C.
- HEALTH AND PHYSICAL EDUCATION IN SMALL SCHOOLS.** By Lois Pedersen Broady and Esther French. Lincoln: University of Nebraska Press, 1946. 343 pp. Price, \$2.50.
- HEALTH CARE OF THE FAMILY.** By Ramona L. Todd, M.D., and Ruth B. Freeman, R.N. Philadelphia: Saunders, 1946. 530 pp. 69 illus. Price, \$3.00.
- THE HEALTH OF SCOTLAND.** By James M. MacIntosh, M.D. Edinburgh: Oliver and Boyd, Ltd., 1943. 52 pp. Price, \$25.
- HEALTH RECORDS IN ENGLAND.** By Sir Arthur S. McNally, M.D., and W. Franklin Moller. London: Frederick Muller, Ltd., 1945. 180 pp. Price, \$2.00.
- HISTING IN GREAT BRITAIN.** Washington, D. C.: American National Red Cross, 1945. 72 pp.
- INTER-AMERICAN CONFERENCE OF PROFESSORS OF HYGIENE.** Washington, D. C.: Pan American Sanitary Bureau, 1945. Publication 212. 151 pp.
- THE JEWS AND MEDICINE.** Essays. By Harry Friedenwald, M.D. 2 Vols. Baltimore: Johns Hopkins Press, 1944. 817 pp. Price, \$7.50.
- THE ORIGIN AND DEVELOPMENT OF GROUP HOSPITALIZATION IN THE UNITED STATES, 1890-1940.** By J. T. Richardson, Ph.D. Columbia: University of Missouri, 1945. 101 pp. Price, \$1.25.
- THE PECKHAM EXPERIMENT.** A Study in the Living Structure of Society. By Innes H. Pearse, M.D., and Lucy H. Crocker, B.Sc. New Haven: Yale University Press, 1945. 333 pp. Price, \$3.50.
- PENICILLIN IN THE TREATMENT OF INFECTIONS:** By Chester S. Keefer, M.D., and Donald G. Anderson, M.D. New York: Oxford University Press, 1945. 48 pp. Price, \$1.50.
- POISONS. THEIR PROPERTIES, CHEMICAL IDENTIFICATION, SYMPTOMS, AND EMERGENCY TREATMENTS.** By Vincent J. Brookes and Hubert N. Alyea. New York: Van Nostrand Co., 1946. 209 pp. Price, \$3.00.
- PRECIS DES MALADIES INFECTIEUSES, AVEC NOTIONS SOMMAIRES DE PROPHYLAXIE, SÉROTHÉRAPIE ET VACCINATIONS.** Sous la direction des Professeurs C. Ionescu-Mihaesti et M. Ciuca. Geneva: Societe des Nations, 1945. 337 pp. Price, Frs. suisses 5.
- PREVENTIVE MEDICINE AND PUBLIC HEALTH.** By Wilson G. Smilie, M.D., D.P.H. New York: Macmillan, 1946. 607 pp. Price, \$6.00.
- PUBLIC BATHS AND HEALTH IN ENGLAND, 16TH-18TH CENTURY.** By Charles F. Mullett. Baltimore: Johns Hopkins Press, 1946. 85 pp. Price, \$1.50.
- SERVICES FOR UNMARRIED MOTHERS AND THEIR CHILDREN.** Children's Bureau, U. S. Dept. of Labor. Washington, D. C.: Gov. Ptg. Office, 1945. 18 pp. Price, \$10.
- SYPHILIS.** Family Health Series. Guide for Public Health Nurses No. 2. Rev. ed. New York: Community Service Society, 1946. 15 pp. Price, \$05.
- TAKE-OFF.** By Grace T. Hallock. New York: National Tuberculosis Assn., 1945. 16 pp. Prices in quantities from publisher.
- WHAT EVERY TEACHER SHOULD KNOW ABOUT THE PHYSICAL CONDITION OF HER PUPILS.** By James Frederick Rogers, M.D. Washington, D. C.: Gov. Ptg. Office, 1945. Pamphlet No. 65. 19 pp. Price, \$10.

# ASSOCIATION NEWS

## SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 12-14

### APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

#### Health Officers Section

- M. Leon Bauman, M.D., 1505 Linwood, Parsons, Kans., Health Officer, Labette County Health Dept.
- Burke Brewster, M.D., City Hall, Fort Worth, Tex., Director, Dept. of Public Health and Welfare
- Choi Chang Soon, M.D., School of Public Health, Ann Arbor, Mich., Health Officer, Bureau of Public Health, Government of Korea
- Raymond H. Curry, M.D., Cabell County Health Officer, Barboursville, W. Va.
- Charles F. Dotto, 88 Mount Pleasant Ave., West Orange, N. J., Health Officer, Township of Maplewood
- Morley R. Elliott, M.D., D.P.H., 320 Sherbrook St., Winnipeg, Man., Canada, Director, Division of Extension Health Services, Dept. of Health and Public Welfare
- Pum Suk Han, M.D., 808 E. Catherine, Ann Arbor, Mich., Health Officer, Bureau of Public Health, Government of Korea
- Eglon Malta-Santos, M.D., 527 Church, Ann Arbor, Mich., Asst. to Para Sector Director of the Amazon Program, Servico Especial de Saude Publica, Brazil
- John Sinelear McCannel, M.D., C.M., 14 Pinehill Rd., Toronto, Ont., Canada, Student, School of Hygiene, Univ. of Toronto (to be Medical Officer of Health)
- Dr. Augusto Morales-Asua, 811 E. Catherine, Ann Arbor, Mich., Student, Univ. of Mich, School of Public Health (Rockefeller Foundation Physician in Bolivia)
- Joseph L. P. Richard, M.D., 147 Victoria St., Edmundston, N.B., Canada, District Medical Health Officer
- Conrad E. Rosdahl, M.D., Kittitas County Health Dept., Ellensburg, Wash., Health Officer
- Dr. Jose Saralegui-Padron, 216 N. State St., Ann Arbor, Mich., Student, Univ. of Mich. School of Public Health (Director of Health Center in Uruguay)
- Bernard Sternhill, M.D., 1951½ New Jersey St., Los Angeles 33, Calif., Base Surgeon. AAAF, Alexandria, La.
- Bertha E. Stokes, M.D., Ascension Parish Health Unit, Donaldsonville, La., Director
- Guillermo Vasquez, M.D., M.P.H., 126 Kirkman St., Lake Charles, La., Director, Calcasieu-Lake Charles Health Unit
- Hugh W. Ward, M.D., Prince Frederick, Md. Deputy State Health Officer
- John S. Wheeler, M.D., M.P.H., '17 School St., Concord, N. H., State Health Officer

#### Laboratory Section

- Estella Alevy, 5421 Sierra Vista Ave., Hollywood 38, Calif., Student, Univ. of California
- Edward A. Birge, M.D., State Laboratory of Hygiene, Madison 6, Wis., Asst. Professor of Clinical Pathology
- Phyllis Conner, Mt. Sinai Hospital, Chicago 8, Ill., Bacteriologist
- Jaroslav Drbohlav, M.D., D.P.H., Mysliveckova 8, Prague, XIV, Czechoslovakia. Director, Div. of Diagnosis, Czechoslovak National Institute of Health
- Nathan Entner, 2246 Malcolm Ave., Los Angeles 25, Calif., Student, Univ. of California
- Vernon D. Foltz, M.S., Kansas State College. Dept. Bact., Manhattan, Kans., Assoc. Professor of Bacteriology

Bernard Heinemann, Ph.D., 3593 Bainbridge Ave., New York 67, N. Y., Research Bacteriologist, Schieffelin & Co.

Emmarie C. Hemphill, M.A., 1005 Berkshire, Ann Arbor, Mich., Assoc. Serologist, Bureau of Laboratories, Texas State Dept. of Health

George R. Lacy, M.D., Dept. of Public Health Laboratory, Municipal Hospital, Pittsburgh, Pa., Director of Laboratories

LaRue, Roesling, 1127 E. Ann St., Apt. 28, Ann Arbor, Mich., Working in Laboratory, St. Joseph's Mercy Hospital

Dr. A. Ch. Ruys, Honthorstraat 50B, Amsterdam, Z, Holland, Professor of Bacteriology, Univ. of Amsterdam

Gerald J. Schipper, M.D., 903 Cathedral St., Baltimore, Md., Student, Johns Hopkins School of Hygiene and Public Health

Charles A. Schlutz, 1942 E. 74th St., Chicago, Ill., Supervisor, Blood Transfusion Center, Michael Reese Research Foundation

Joseph L. Schwartz, M.E., 261 South 3rd St., Philadelphia 6, Pa., President, Trutest Laboratories, Inc.

Frithjof Setter, Ph.D., Parke Davis & Co., Detroit, Mich., Asst. to Director of Biological Research & Products

#### *Vital Statistics Section*

Dr. Abelardo E. Achecar, 415 E. Williams, Ann Arbor, Mich., Student, Univ. of Michigan, School of Public Health

Robert T. Little, State Health Dept., Charleston, W. Va., Public Health Representative, U. S. Public Health Service

#### *Engineering Section*

George S. Ames, 710 Virginia Ave., Norfolk 8, Va., Writer, U. S. Public Health Service

W. L. Brewer, Box 844, Angleton, Tex., Sanitarian, Brazoria County Health Unit

Shelby H. Colson, Box 247, Bushnell, Fla., Senior Sanitarian, Sumter County Health Dept.

Morris R. Gonzales, 922 S. Colorado St., San Antonio, Tex., Sanitarian, City Health Dept.

William A. Healy, 55 Prospect St., Brookline 46, Mass., Sanitary Engineer, Brookline Health Dept.

Capt. Harold E. Milliken, Sn.C., Sqdn. M. 432nd AAF BU, Army Air Base, Portland 19, Ore., Sanitary Engineer

Charles W. Mole, 3914 Palmyra Ave., Tampa 6, Fla., Senior Sanitary Officer, Hillsborough County Health Dept.

J. P. Randle, 411 Forest, Shreveport, La., Chief Inspector, Caddo-Shreveport Health Unit

Reed H. Walthrop, M.A., Health Center Bldg., P.O. Box 40, Corpus Christi, Tex., Area

Supervisor, P.A. Sanitarian (R), U. S. Public Health Service

#### *Industrial Hygiene Section*

Russell C. Carrell, M.D., Lago Oil & Transport Co., Ltd., Aruba, Curacao, N.W.I., Medical Director

In-Ho Choo, M.D., 808 E. Catherine St., Ann Arbor, Mich., Health Officer, Bureau of Public Health, Government of Korea

Isador J. Ehlin, M.D., 1235 Grand Concourse, New York, N. Y., Asst. Social Hygiene Clinic, City Dept. of Health

George O. Nelson, Jr., M.D., 11-21st St., Nitro, W. Va., Plant Physician, American Viscose Corp.

Lydia L. Poff, R.N., P.O. Box 806, Covington, Va., Nurse, Industrial Rayon Corp.

#### *Food and Nutrition Section*

Howard E. Chaney, 103 Gay St., Cambridge, Md., Chemist-in-charge, Branch Laboratory, State Dept. of Health

Edward J. Hassell, Box 294, Weirton, W. Va., Research Chemist, Weirton Steel Co.

Edward L. Holmes, Ph.D., 1135 W. Fullerton Ave., Chicago 14, Ill., Sanitation Director, American Institute of Baking

Lucy Mary Maltby, Ph.D., M.S., 64 Gorton, Corning, N. Y., Director, Home Economics Dept., Corning Glass Works

Modane Marchbanks, 812 C. & S. National Bank Bldg., Atlanta 3, Ga., Director of Home Economics, National Peanut Council, Inc.

Richard M. McClarren, D.V.M.,\* 1776 Quincy Court, Willow Run, Mich., Student, School of Public Health, Univ. of Michigan

#### *Maternal and Child Health Section*

Arthur B. Emmons, M.D., 2430 Coffee Pot Drive, St. Petersburg, Fla., School Physician, Hillsboro County Health Dept.

John F. Dong Chul Kim, M.D., Univ. of Mich., School of Public Health, Ann Arbor, Mich., Health Officer, Bureau of Public Health, Government of Korea

Dorothy C. Peckham, R.N., 370 Hamilton Ave., Norwich, Conn., Director, Preston Public Health Nursing Service

Daniel Powers, M.A., 2861 Sedgwick Ave., New York 63, N. Y., Administrative Asst., City Dept. of Health

Doris Siegel, M.S., 1745 K. St., Apt. 41, Washington, D. C., Medical Social Consultant, Children's Bureau

#### *Public Health Education Section*

Joseph E. Brown, Jr., 4807 27th Rd. S., Arlington, Va., Chief, Public Inquiries Section, U. S. Public Health Service

Lai-Wan Cheung, Stockwell Hall, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Cristela Delgado-Murphy, 144 Mosher Hall, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Bernice Douglas, 1159 Brighton 15 St., Brighton Beach 24, N. Y., In Charge of Public Relations, Brooklyn Tuberculosis and Health Assn.

Mary C. Drennan, 307 E. Franklin St., Chapel Hill, N. C., Student, Univ. of North Carolina

Violet G. DuBois, 1006 S. Forest Ave., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Solvig B. Erickson, 1822 S.E. 37th Ave., Portland 15, Ore., Health Educator, King County Health Dept., Washington

Edwin G. Green, D.Lit., P. O. Box 1232, Oklahoma City 1, Okla., Acting Executive, Oklahoma County Health Assn.

Genevieve R. Hyde, P.O. Box 1189, Boise, Ida., Exec. Sec., Idaho State Dept. of Institutions

Daisy B. Jacobs, 1238 Ferdon Rd., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Sister John, R.N., 660 Exchange St., Astoria, Ore., Director, School of Nursing, St. Mary's Hospital

William J. Johnson, 2103 Withrow Court, San Pedro, Calif., Representative, U. S. Public Health Service

Virginia B. Lyon, 1022 Forest Ave., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Beatrice B. Martin, 825 E. University Ave., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

L. Maurine Peterson, M.P.H., 916 Hays, Boise, Ida., Health Educator, State Dept. of Public Health

Margaret Reed, M.A., 1027 East Catherine, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

A. Marion Robinson, 1240 Wisconsin Ave., N.W., Washington, D. C., Information Specialist, Div. of Public Health Methods, U. S. Public Health Service

Samuel W. Schlosberg, O.D., 50 Savin St., Roxbury 19, Mass., Director, Optometric Clinic, and Asst. Director in Health Education, Burroughs Newsboys Foundation

Kathryn L. Shattuck, 1320 Forest Court, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Rhobia C. Taylor, 3700 Massachusetts Ave., N.W., Washington, D. C., Information Specialist, Division of Public Health Methods, U. S. Public Health Service

Anna J. Weir, M.A., 2238 Fifth Ave., New

York 35, N. Y., Exec. Sec., Harlem Tuberculosis and Health Committee

Stanley L. Wendkos, M.S., 3921 Locust St., Philadelphia 4, Pa., Student, Univ. of Pennsylvania

Merl I. Whorlow, 1105 S. State, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

#### *Public Health Nursing Section*

R. Margaret Allen, 1821 Federal Ave., Seattle 2, Wash., Advisory Public Health Nurse, Venereal Disease Control, State Dept. of Health

Maxine Anderson, 303 Terminal Sales Bldg., Portland 5, Ore., Area Supervising Nurse, Agricultural Workers Health Assn.

Lily Berman, M.P.H., 122 North Pass, Apt. 3, Burbank, Calif., Area Nursing Supervisor, Agricultural Workers Health and Medical Assn.

Edna P. Estes, R.N., 1120 26th St., Des Moines, Iowa, Polk County Public Health Nurse

Ella L. Fortune, R.N., M.Sc., P.O. Box 4434, Brookland Station, Washington 17, D. C., Staff Nurse, District of Columbia Health Dept.

Enelida Geymonat, Camacua 282, Buenos Aires, Argentina, S.A., Student, Vanderbilt University, School of Nursing

E. Dorothy Gordon, R.N., 3 Mason St., Glens Falls, N. Y., Asst. District Supervising Nurse, State Dept. of Health

Isabel M. Hogan, 432 Merritt St., Oshkosh, Wis., City Tuberculosis Nurse, Oshkosh Health Dept.

Ivah K. T. Hufnagel, R.N., 1195 Center St., Des Plaines, Ill., Field Nurse, Chicago Health Dept.

Florence C. Kalbus, 82 DeBaun Ave., Ramsey, N. J., Public Health Nurse, Northern Bergen Nursing Service

Annamae I. Mahaney, 4262 Creed Ave., Los Angeles, Calif., Supervising Public Health Nurse, Los Angeles County Health Dept.

Tallulah Markham, R.N., Health Dept., Apalachicola, Fla., Senior Public Health Nurse, State Board of Health

Kharis B. Mayers, State Board of Health, Jacksonville, Fla., Public Health Nursing Consultant and Senior Asst. Nurse Officer (R) U. S. Public Health Service

Lucelle P. Miller, R.N., 221 S. Grace, Lombard, Ill., Staff Nurse, DuPage County Health Dept.

Elizabeth A. Murrish, R.N., 621 N. Henry St., Madison, Wis., Advisory Public Health Nurse, Div. of Tuberculosis Control, State Board of Health

Kathleen A. Norris, R.N., 1419 Washington

St., Boise, Ida., Public Health Nursing Consultant, Tuberculosis Control Division, U. S. Public Health Service

Apollonia M. F. Olson, 500 Riverside Drive, New York, N. Y., Student, Teacher's College, Columbia University

Eleanor E. O'Meara, R.N., P.O. Box 31, Ashland, Wis., Advisory Public Health Nurse, State Board of Health

Corinne Pennington, R.N., County Court House, Hillsboro, Ore., Supervising Nurse, Washington County Public Health Dept.

Catherine B. Ransey, State Board of Health, Columbia, S. C., State Orthopedic Consultant, State Board of Health

Ann R. Steele, R.N., Box 247, Bushnell, Fla., Senior Public Health Nurse, Sumter County Health Dept.

Luella J. M. Stopher, 12 Spoon Ave., Poughkeepsie, N. Y., Director, Poughkeepsie Visiting Nurse Assn.

Frances A. Sweeney, P.O. Box 974, Gooding, Ida., Gooding County Public Health Nurse

Ruth M. Underwood, 73 W. Pettebone St., Forty Fort, Pa., Staff Nurse, West Side Visiting Nurse Assn.

#### *Epidemiology Section*

Ernesto Gonzales-Salas, M.D., 430 South Fifth Ave., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Hector S. Purcell-Pena, M.D., 415 E. William St., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Rogelio Valladares G., M.D., M.P.H., Av. Vilafior 23, Elrecreo, Caracas, Venezuela, S.A., Asst. to Chief of Tuberculosis Div., Ministeria de Sanidad y Asistencia Social

Capt. Kenneth W. Wright, M.C., 40 Elder St., Berea, Ky., Medical Officer, 167th Evacuation Hosp. (overseas)

#### *School Health Section*

Pompeyo Cintron-Ruiz, 1520 Cambridge Rd., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Elizabeth I. Collins, 215 S. 10th Ave., Maywood, Ill., Supervising Nurse, Board of Education

Arthur L. Harnett, Jr., Ed. D., 201 University Hall, Columbia Univ., New York 27, N. Y., Teacher of Hygiene, Columbia University

Flora V. Kelley, R.N., 1414 W. 12th St., Hutchinson, Kans., School Nurse, Board of Education

Mary A. McLoon, M.D., 3415 Macklind Ave., St. Louis 9, Mo., School Physician, Board of Education

Lorena S. Pellette, Glen Moore, Pa., School Nurse, Spring City Schools

Alexander J. Phillips, Ph.D., 677 Dundas St., Toronto, Ont., Canada, Director of Study, National Committee for School Health Research

Carlos Ramirez-Silva, 1520 Cambridge Rd., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Grace L. Ryan, M.A., 904 E. High, Mt. Pleasant, Mich., Professor of Health Education, Central Michigan College of Education

#### *Dental Health Section*

Guillermo Feo-Calcano, Urdaneta a Salom 71-D, Caracas, Venezuela, S.A., Director of Rural Public Health Dentistry, Ministerio de Sanidad y Asistencia Social

Charles L. Hyser, D.D.S., 5 E. 57th St., New York 22, N. Y., Dentist

Leland L. Kraus, D.D.S., 411 E. Mason St., Milwaukee 2, Wis., Staff Member, Dental Out-Patient Dept., Milwaukee Children's Hospital

Louis T. Maloney, Ph.B., 166 Common St., Watertown, Mass., Asst. to President, Massachusetts Dental Society

Ewald C. Wetzel, D.D.S., 2522 E. Capitol Drive, Shorewood, Wis., Member of Shorewood Health Board, and Director of Dental Division

#### *Unaffiliated*

Carmen N. Cardona, 144 Mosher Hall, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Harry G. Chase, 11305 93rd St., Edmonton, Alberta, Canada, Sanitary Inspector, Edmonton Health Dept.

Fred H. Downs, Jr., 805 Mulberry St., Montgomery 6, Ala., Principal Sanitarian, State Health Dept.

Edgar E. Evans, P.O. Box 29, Calera, Ala., Student, School of Public Health, Univ. of Michigan

Gertrude R. Michalove, 3133 Connecticut Ave., Washington, D. C., Liaison Officer, Office of Health Information, U. S. Public Health Service

Mary M. Mollica, 119 Park Terrace, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Gertrude Owen, R.N., United States Indian Service, Dixon, Mont., Field Nurse

Albert W. Snoke, M.D., New Haven Hospital, New Haven, Conn., Director, Grace-New Haven Community Hospital

Harry P. Stimson, D.O., 7 E. Grand Ave., Highland Park 3, Mich., State Public Health Chairman, Michigan Assn. of Osteopathic Physicians and Surgeons



HOWARD M. KLINE, PH.D., APPOINTED  
TECHNICAL SECRETARY FOR MEDICAL  
CARE STUDIES

The Executive Board of the American Public Health Association, on recommendation of the Subcommittee on Medical Care, Committee on Administrative Practice, has appointed Howard M. Kline, Ph.D., of Washington, D. C., as technical secretary to head a staff to conduct studies under the direction of the committee.

It will be recalled that the Rockefeller Foundation, through the International Health Division, has recently made an appropriation to the Subcommittee on Medical Care for studies of existing programs, especially in relationship to health departments, and for the analysis of pending legislation (*A.J.P.H.* Mar. 1946, p. 302).

Dr. Kline, who is a native of Covington, Kentucky, is a graduate of the University of Toledo and holds the A.M. and Ph.D. degrees from the Maxwell School of Citizenship and Public Affairs, Syracuse University. His specialty in academic life was public law and public administration. He served on the instructional staff of Syracuse University, the University of Michigan, and the University of New Mexico, and was assistant professor of public law and public administration at the University of Maryland. For two years ending in 1944 Dr. Kline was chief of the State Consulting Service, Division of Vital Statistics, U. S. Bureau of the Census, Washington. Since January, 1944, he has been a commissioned officer in the

U. S. Public Health Service detailed by the Division of Public Health Methods to Procurement and Assignment Service of the War Manpower Commission, more recently attached to the Office of the Administrator, Federal Security Agency.



*Howard M. Kline*

In this capacity he served as chief of the field and of the statistics sections, as assistant executive officer, and has most recently been serving as acting executive officer of the Procurement and Assignment Service.

Serving with Dr. Kline will be two staff associates whose appointments will be announced shortly.

DECEASED MEMBERS

Waller S. Leathers, M.D., Nashville, Tenn.,  
Elected Member 1910, Charter Fellow, Life  
Member, Health Officers Section  
Charlotte S. Greenhood, DDS, San Francisco, Calif.,  
Elected Member 1945, Dental Health Section  
John J. Heagerty, MD, D.P.H., Ottawa,

Ontario, Canada, Elected Member 1937,  
Health Officers Section  
Thomas Kelly, V.M.D., Philadelphia, Pa.  
Elected Member 1929, Health Officers  
Section  
Walter Kleberg, M.D., Galveston, Tex., Elected  
Member 1930, Health Officers Section  
Mrs. Elin MacDougall, M.A., Bridgeport,

Conn., Elected Member 1944, Public Health Nursing Section

Willis C. Templer, M.D., Corning, N. Y., Elected Member 1936, Industrial Hygiene Section

Paul A. Teschner, M.D., Chicago, Ill., Elected

Member 1943, Public Health Education Section

Edward F. Timmins, M.D., South Boston, Mass., Elected Member 1944, Health Officers Section

Margaret B. Wilson, Washington, D. C., Elected Member 1915, Unaffiliated

## LETTER TO THE EDITOR

SIR:

I note with much interest, the article by Dr. Edith Potter on the Rh factor in the current Journal, as well as your editorial comment.

You may be interested to know that since 1944, the Paterson Board of Health Laboratories, at the request of the Passaic County Medical Society, have tested every prenatal specimen of blood received by us for the Wassermann test, for the Rh factor and blood grouping as well. I am enclosing a reprint describing the results of the first year of our work. (*J.A.M.A.*, May 5, 1945, Vol. 128, p. 19.) As far as I know, we are the first municipal laboratory to enter this field.

I wish I could agree with the comment on the simplicity of the test. Like all serological tests, it must be carefully handled by experienced serologists. Many are the crimes committed in the name of Rh by the inexperienced technician. Then, too, all Rh is not divided into two parts of which one shall be clearly Rh-positive and the other Rh-negative. The sub-type rears its head, etc.

I congratulate you on having secured so eminent an authority as Dr. Potter to write that fine article.

ANNA I. VAN SAUN,  
*Director*

Paterson, N. J.

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### Vacant Positions Listed with the Association's Vocational Counseling and Placement Service

A considerable number of additional openings for candidates trained in the various public health specialties have come to the attention of the American Public Health Association's Vocational Counseling and Placement Service during the past month. At the time this issue of the *Journal* goes to press the number of all available openings listed has increased to 412 positions offered by 122 employers in more than 30 states and territories. The openings are in official agencies on local, state, and federal levels, as well as in voluntary health agencies and in a few industrial companies.

Two hundred forty openings—58 per cent of the total number—were offered to physicians for positions carrying administrative, epidemiologic, and (more infrequently) clinical responsibilities. Eighty-two positions were listed for sanitary engineers and sanitarians, 5 for industrial engineers, 11 for non-medical administrators, 7 for dentists, 27 for health educators, 24 for laboratory workers, 5 for statisticians, and 11 for allied professional groups.

One hundred forty-three trained candidates in the various professional categories have recently indicated their interest in public health positions and have filed or reactivated their applications for registration with our Placement Service; a great percentage of them are veterans of the armed forces or expect their release in the near future. Candidates for openings in the field of public health nursing are not registered but are being referred to professional placement agencies for clearance.

The Vocational Counseling and Placement Service is jointly sponsored by the American Public Health Association's Committee on Professional Education and the U. S. Public Health Service. It offers free assistance to all employers and trained candidates for positions in the public health field and trained specialists available for counsel by personal contact and correspondence with all men and women who are interested in public health work.

### POSITIONS AVAILABLE

(Supplemental to list in March Journal)

**Wanted:** Director, State-wide Hospital Survey. Survey of hospital facilities in Maryland planned under special committee of State Planning Commission. Applicant must have experience in hospital administration and community organization. Salary \$5,000 plus travel expense. Apply J. D. Colman, Director, Associated Hospital Service of Baltimore, Inc., 506 Park Ave., Baltimore 1, Md.

**Wanted:** Medical Director. New prepayment medical care program under joint sponsorship of State Medical Society and Blue Cross needs full-time medical director. Starting salary \$6,000 per annum. Apply J. D. Colman, Director, Associated Hospital Service of Baltimore, Inc., 506 Park Ave., Baltimore 1, Md.

**Tennessee Department of Public Health** announces vacancies for public health officers, sanitary engineers, chemical en-

gineers in stream pollution control and industrial hygiene work, and for public health nurses. Salary dependent on training and experience. Apply State Department of Health, Nashville 3, Tenn.

**Commercial opening for health man.** Large specialty manufacturing organization with nation-wide sales force and a number of public relations men who call on health officers. If you have public health background and feel you might like to get into commercial life this opportunity may appeal. Ability to deal with people important. Also ability to write and speak before P.T.A. groups, etc. Travel necessary. Write fully in confidence giving complete background, education, compensation. Box L, Employment Service, A.P.H.A.

**Industrial Hygiene Engineer position** available with Oregon State Board of

Health, Portland, Ore. \$300-\$375 per month. Requires B.A. in Chemical Engineering, 2 years as industrial hygiene engineer in government agency, 1 year graduate work in chemical engineering or industrial hygiene (2 years' engineering experience may be substituted for 1 year graduate work). Unassembled examination. Write Merit System Council, 616 Mead Bldg., Portland 4, Ore.

**Wanted:** Public Health Nurses for generalized nursing program. Salary range \$210 to \$240 per month. Under Civil Service, 40 hour week, vacation and sick leave privileges. Address Director of Public Health Nursing, City of Seattle, 504 County City Bldg., Seattle 4, Wash.

**Wanted:** Full-time dentist interested and qualified in preventive, public health, and children's dentistry. Position established by Marin Co. Health Dept. Salary \$4,800 plus travel expense. Dental trailer with complete equipment furnished. Public health experience and training desirable. Must be licensed in California. Apply Irving D. Johnson, M.D., Marin Co. Health Officer, 704 4th St., San Rafael, Calif., stating personal data, educational background and experience.

**Wanted:** Executive Director for public health generalized service, with college degree and experience in public health nursing. Agency is in suburban Philadelphia. Box P, Employment Service, A.P.H.A.

**Wanted:** Physician qualified to assume position as Director of Maternal and Child Health and Crippled Children Division. Minimum requirements include public health training and experience and training in pediatrics. Salary \$325 to \$350. Under Merit System. Address State Board of Health, Capitol Building, Cheyenne, Wyoming.

**Wanted:** Physician qualified to assume position as Director of Division of Communicable Disease Control. Special attention given to tuberculosis. Salary \$325 to \$350. Under Merit System. Address State Board of Health, Capitol Building, Cheyenne, Wyoming.

**Research Fellowship** in Sanitary Engineering available to graduate engineer with special training in chemistry and bacteriology. \$1,000 per annum with two-thirds residence time credited toward M.S. degree. Address, Director, Engineering and Industrial Experiment Station, University of Florida, Gainesville, Fla.

**Wanted:** Qualified public health physicians and public health nurses in

Texas. Applicants should have specialized training or experience in public health work. George W. Cox, M.D., State Health Officer, Austin, Texas.

**Wanted Immediately:** Public Health Nursing Supervisor with B.S. degree. Generalized program. Salary from \$190 to \$225 plus car allowance. City of 105,000. Apply Dr. E. V. Thiehoff, Commissioner of Health, City Health Dept., Peoria, Ill.

**Wanted:** Health Educator. Entrance salary \$3,758, top salary \$4,298 per annum; Epidemiologist and Registrar of Vital Statistics, M.D., with experience in epidemiology, entrance salary \$4,500, top salary \$5,000 plus, per annum; Staff Physician for health districts, qualification M.D., entrance salary \$3,158, top salary \$3,879 per annum. Apply Commissioner of Health, City Hall, Cincinnati 2, Ohio.

**Physician Wanted:** Man or woman with general clinical experience and public health background for Alaska Marine Health Unit. Services include TB case finding, x-rays, physical examinations, immunizations, well baby conferences, pre- and post-natal examinations, VD control and allied public health procedures. Vessel is 115', well appointed, comfortable, accommodating physician, nurse, laboratory technician, secretary, dental hygienist and crew. Position offers opportunity for travel and service to communities along Alaska's scenic coastline. Communicate with Territorial Dept. of Health, Box 1931, Juneau, Alaska.

**Wanted:** Registered Nurses, college degree, public health certificate. Five day week, travel position, \$220 per month full maintenance in field. Apply American National Red Cross Pacific Area, Nursing Service, Civic Auditorium, San Francisco, Calif.

**Wanted:** White and colored public health nurses with cars for Migratory Labor Health Association. Salary \$2,100, 40 hour week. Nursing service to Jamaican and domestic farm workers housed in camps in Florida, South Carolina, North Carolina, and Virginia. Apply Area Supervising Nurse, Box 1671, West Palm Beach, Fla.

**Position open** for bacteriologist-chemist, pathologist. Permanent, full-time. State qualifications, experience and salary expected. Apply Box 583, Fall River, Mass.

**Sanitary Engineers** and graduate sanitarians, college degree required, wanted for overseas work. Starting salaries from \$3,450 to \$5,325 depending on qualification.

tions. Full maintenance provided. Apply U.N.R.R.A. Health Division, Building F, 1344 Connecticut Ave., Washington, D. C.

Oregon State Board of Health has openings in following positions: County Health Units Director, salary range \$400 to \$500 per month. Venereal Disease Control Officer, beginning salary \$450 per month. Tuberculosis Control Officer, beginning salary \$450 per month. Several county health officer positions open, salary range \$400 to \$525 per month. Ample travel allowance. Apply A. T. Johnson, Personnel Officer, Oregon State Board of Health, Portland 5, Ore.

#### Hawaii Board of Health Wants:

Psychiatrist to direct bureau of mental hygiene. Salary \$645 to \$728.33 plus \$45 bonus. Qualifications: 2 years' experience in psychiatry and neurology following graduation from medical school of recognized standing, including or supplemented by 1 year internship in recognized general hospital and supplemented by 2 years' specialized training in psychiatry and neurology.

Obstetrician to assist in execution of program of maternal and child health. Salary \$520 to \$620 plus \$45 bonus. Qualifications: 3 years' experience or specialized training in obstetrics following graduation from medical school of recognized standing, including or supplemented by 1 year internship in recognized general hospital and 1 year graduate training in public health.

Public Health Physician to direct public health program of county district. Salary \$520 to \$620 plus \$45 bonus. Qualifications: 2 years' experience as physician, preferably in public health work, and graduation from medical school of recognized standing, including or supplemented by 1 year internship in recognized general hospital and supplemented by 1 year graduate training in public health.

Three Sanitary Engineers. One as division director with P-5 classification to direct mosquito control program, salary \$436.67 to \$520 plus \$45 bonus. Second position, P-4, that of engineer-in-charge of sanitary engineering projects in county district, salary \$362.08 to \$436.67 plus \$45

bonus. Third position, P-3, that of housing engineer responsible for housing program, salary \$295.42 to \$362.08. Experience: For sanitary engineer, P-5, 4 years' professional engineering experience of which 2 years shall have been in sanitary engineering work; for county sanitary engineer, P-4, 3 years' experience in sanitary engineering work; for housing engineer, P-3, 2 years' experience in sanitary engineering work, preferably housing. Training: For all 3 sanitary engineers, graduation from college or university of recognized standing, with specialization in engineering, preferably supplemented by courses in public health engineering. Write to Civil Service Commission, Territory of Hawaii, 206 Hale Auhau, Honolulu, Hawaii. Use clipper mail.

Wanted: Physician in Hartford, Conn., population 185,000, as Director of Bureau of Maternal and Child Hygiene. Write Health Officer, Department of Health, Hartford 4, Conn.

Minneapolis, Minn., seeks Director of Venereal Disease Control. Beginning salary \$5,000. Applications close April 30, 1946. Residence requirement waived. Requirements: Graduation from medical school of recognized standing, registration or eligibility for registration as physician in Minnesota, completion of post-graduate study in public health school of recognized standing with C.P.H. or M.P.H. degree. Not less than 1 year general clinical experience preferably in hospital of acceptable standards and 1 year experience as director of public health program in city, county or state health department, or as director of venereal disease control program. Full-time position. Apply Civil Service Commission, 109 City Hall, Minneapolis, Minn.

Wanted: Assistant in Health Division, Council of Social Agencies, interested in community organization and health education. Large city and metropolitan area. Training and experience in public health organization and health education required. Write Box G, Employment Service, A.P.H.A.

#### POSITIONS WANTED

Public Health Administrator, B.A., M.S.P.H., recently released after 4 years' service as hospital adjutant and assistant medical inspector, seeks position as administrator or health educator. Experienced in teaching field. Organizing ability. References. A-517

Senior Bacteriologist, Ph.D., 25 years' experience in public health and medical

bacteriology, 3 years executive laboratory post in Army general hospitals, seeks hospital or public health laboratory connection. L-487

Bacteriologist, woman, B.S. 1941, 4½ years' laboratory experience, hospital and public health, seeks position in or near New York City. Prefer desk position such as technical literature research,

abstracting, etc. Also interested in laboratory work. L-481

**Bacteriologist:** M.A., Johns Hopkins, seeks position in medical college or state public health laboratory. Broad experience. L-482

**Chemist,** experienced in food, drug and insecticide analysis, seeks laboratory position. L-483

**Pathologist,** Board Diplomate, competent and experienced in pathologic anatomy, clinical pathology, bacteriology and tropical medicine; years of public health experience as laboratory director and research associate, consultant, professor and executive; numerous publications, excellent references. Age 40. L-472

**Serologist-Bacteriologist,** Ph.D., D.V.M., 16 years' experience in public health and hospital work, 3 years in charge Army hospital laboratory. Desires Directorship with opportunity for research. L-426

**Bacteriologist** with service experience in food bacteriology, enteric group studies, respiratory diseases, malaria and epidemiological problems, seeks position in New England or Midwest. L-485

**Health Educator,** Woman, Negro, trained in public health, community organization, adult education, workers education and related fields and experienced as teacher, seeks position with voluntary or official agency or as teacher. H-518

**Sanitary Engineer,** 5½ years' operational experience city sewage plant, nearly 4 years Captain in Sanitary Corps, U. S. Army, seeks position as sanitary engineer in Eastern U. S. E-488

**Veterinarian,** recently released from U. S. Public Health Service, formerly in practice, seeks part-time or full-time position with city, state or county health department in State of Virginia or Illinois. M-463

### Examinations for U.S.P.H.S. Appointments

Examinations for medical officers, Regular Corps, U.S.P.H.S., at various convenient localities throughout the country. Appointments to fill vacancies of Assistant Surgeon (First Lieutenant) and Senior Assistant Surgeon (Captain).

**Regular Corps appointments, permanent.** Qualified doctors for a number of fields, including research, general hospitals, special hospitals, foreign duty, and public health programs. Assignments according to abilities and experiences.

Entrance pay, Assistant Surgeon with dependents, \$3,411 a year. Senior Assistant Surgeon with dependents, \$3,991 a year. Promotions regular intervals up to and including the grade of Medical Director which corresponds to full Colonel at \$7,951 a year. Retirement pay at 64, \$4,500 a year. Full medical care including disability retirement at three-fourths pay. Expenses of travel paid by Government. Thirty days' annual leave with pay.

Applicants for the grade of Assistant Surgeon must be citizens of the United States, must present diploma of graduation from recognized medical school, have had or be in the process of completing the 7th year of college or professional training or experience since high school graduation (2 years premedical, 4 years of medicine, 1 year internship), and must have physical examination at the place of oral examination by medical officers of the Service. Applicants for the grade of Senior Assistant Surgeon must meet above requirements and have had 4 additional years of postgraduate training or experience.

**Examinations oral and written.** Written examination May 14, 15, and 16, at places convenient to the candidate and the Service. National Board grades may be used for the Assistant Surgeon examination. Oral examination at 9 a.m. at the places and dates listed:

Atlanta, Ga.—Malaria Control in War Areas, 605 Volunteer Bldg .....	Apr. 22
Baltimore, Md.—Marine Hospital, Wyman Park Drive & 31st Street.....	May 9
Boston, Mass.—Marine Hospital, 77 Warren Street (Brighton).....	May 6
Chicago, Ill.—Marine Hospital, 4141 Clarendon Avenue.....	Apr. 30
Cleveland, Ohio—Marine Hospital, Fairhill Road & E. 124th Street.....	May 3
Denver, Colo.—617 Colorado Bldg.....	Apr. 8
Detroit, Mich.—Marine Hospital, Windmill Pointe.....	May 2
Fort Worth, Tex.—U. S. Public Health Service Hospital.....	Apr. 25
Kirkwood, Mo.—Near St. Louis—Marine Hospital, 525 Couch Ave.....	Apr. 26, 27
Los Angeles, Calif.—U.S.P.H.S. Relief Station, 406 Federal Building.....	Apr. 9
Minneapolis, Minn.—Office of Indian Affairs, 218 Federal Office Building.....	Apr. 29
New Orleans, La.—Marine Hospital, 210 State St.....	Apr. 23, 24
New York, N. Y.—Marine Hospital, Stapleton, Staten Island.....	May, 7, 8
Norfolk, Va.—Marine Hospital, Hampton Blvd., Larchmont.....	May 10
San Francisco, Calif.—Marine Hospital, 14th Ave. and 1st Blvd.....	Apr. 10, 11
Seattle, Wash.—Marine Hospital, Judkins St. and 14th Ave. South.....	Apr. 12, 13
Washington, D. C.—U.S.P.H.S. Dispensary, Fourth and D Sts. S.W.....	Apr. 4

Application forms may be obtained by writing to the Surgeon General, U. S. Public Health Service, Washington 25, D. C.

### Announcement of Examination for Appointment of Sanitary Engineers to the United States Public Health Service

An examination for appointment as Assistant Sanitary Engineer and Senior Assistant Sanitary Engineer in the Regular Commissioned Corps of the United States Public Health Service is scheduled to be held at

Washington, D. C.—USPHS Dispensary, Fourth and D Streets, S.W.....	April 15
	June 3
New York New York—Stapleton, Staten Island—Marine Hospital.....	April 17
Cincinnati, Ohio—USPHS Water & Sanitation Investigation Station, East Third and Kilgour Streets.....	April 19
Atlanta, Georgia—Malaria Control in War Areas, 605 Volunteer Bldg.....	May 15
New Orleans, Louisiana—Marine Hospital, 210 State Street.....	May 17
Los Angeles, California—USPHS Relief Station, 406 Federal Bldg.....	May 21
San Francisco, California—Marine Hospital, 14th Ave. and Park Blvd....	May 23
Seattle, Washington—Marine Hospital, Judkins St. and 14th Ave. South..	May 27
Denver, Colorado—USPHS District Office, 617 Colorado Building.....	May 29
Chicago, Illinois—Marine Hospital, 4141 Clarendon Avenue.....	May 31

The oral professional, academic, and physical examinations will be held at 9 A.M. at places and dates given above. The final written portion of the examination will be given simultaneously at the above locations beginning on June 5, 1946, and ending on June 7, 1946. The written portion of the examination may be given at certain other stations of the Service where two or more regular commissioned officers are on duty, if request is made by an applicant. Minimum age—21.

Education and Training: (1) Assistant, at least 7 years of educational (exclusive of high school) and professional training or experience and a degree in engineering (sanitary engineering course); (2) Senior Assistant, as above plus 4 additional years of post-graduate professional training or experience.

Compensation (including allowance for quarters and subsistence): (1) Assistant, \$3,411.00 with, and \$2,975.50 without dependents; (2) Senior Assistant \$3,991.00 with, and \$3,555.50 without dependents.

Applicants should address a letter to the Surgeon General, U. S. Public Health Service, Washington, D. C., at the earliest practicable date, requesting application blanks. Such letter should include a brief biographical statement relative to professional school or college attended, type of studies pursued, degrees granted and subsequent training or experience. Applicants of foreign birth must furnish proof of United States citizenship.

Transportation expenses to and from and cost of maintenance at place of examination must be assumed by the candidate.

### Announcement of Scholarships in Nutrition

Four scholarships available, through North Carolina State Board of Health, at University of Tennessee, Knoxville, for year 1946. Applicants can enter in March or June. Scholarships will provide stipend of \$100 a month for 12 months plus tuition fees and travel while in training. Training period will be for 12 months and will include 9 months' formal training and 3 months' supervised field work. Eligibility requirements: (a) Age between 23 and 35 years; (b) Bachelor's degree in foods and nutrition, chemistry or biological sciences from a recognized institution; (c) teaching, hospital dietetics, nutrition research or other related subjects for a period of at least 2 years. Upon successful completion of training at University of Tennessee, candidates will be employed as nutritionists by North Carolina State Board of Health. Salary scale for nutritionists is \$1,800 to \$3,000 with additional travel allowance of \$1,200 a year. Interested applicants should send transcript of their college record and statement of experience since graduation to Director of Nutrition Division, State Board of Health, Raleigh, N. C.

*Advertisement***Opportunities Available**

WANTED—(a) Public health physician to serve as medical associate on staff of national health agency; duties include program planning, writing, speaking, and travel; headquarters in New York. (b) Professor and head of department of Hygiene; state university planning extension program and offering curriculum in Public Health whereby students may major and receive baccalaureate degree; young man experienced in teaching qualified to develop program required. (c) Director of communicable disease division; central metropolis; ex-service man who wishes a career in public health work preferred; Middle West. (d) Woman physician to take charge of medical department of progressive day school connected with university; approximately 800 children from 4 to 16; ninety from 2 to 4. (e) Public health physician with administrative experience or ability to direct department serving town of 45,000; progressive program, well staffed department; South. (f) Assistant health officer, preferably tuberculosis clinician with public health experience; town of 40,000 in Southern California; \$4,500 including travel expenses. (g) County health officer; in-service training provided; woman eligible; minimum \$4,200, clinician, venereal disease control program; \$4,500; South. (h) Woman physician to succeed director of student health department in young women's college; enrollment approximately 1,300 students; 200 faculty; medical staff comprised of four full-time physicians and consultant psychiatrist; modern infirmary with well equipped x-ray and laboratory department; faculty appointment with full voting privilege. (i) County health officer; winter resort town; \$5,000–\$5,700, including travel expense; South. PH4-1 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health coordinator; small community in Wisconsin; well organized program. (b) Health educator; private, non-profit agency providing medical care and health services to large group of workers; Master's degree in education with major in health education desirable; \$3,600 plus travel allowance. (b) Health educator; public school system; Southwest; immediately. (c) Health educator; tuberculosis agency; East. PH4-2 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Public health supervisor; county department of health; Southern California. (b) Several public health nurses; considerable travelling; good climate, roads and opportunity for advancement; winter resort area of the South. (c) Instructor in health; state teachers' college; duties consist of serving as nurse instructor in department of health of college and working with physicians in student health department; East. (d) Public health nurse qualified in tuberculosis nursing to supervise tuberculosis program; county health department; possibility of clinic being developed as research unit; East. (e) Several public health nurses; in-service training provided during which time salary will be \$135 monthly; South. (f) Clinic nurse; county health department; public health certificate necessary; Washington State. Executive director, visiting nurse association; small organization; interesting expansion plans; will have opportunity of selecting own workers; \$3,000; car provided; town of 150,000; Middle West. PH4-3 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

*Advertisement***Opportunities Wanted**

Administrator—Military officer of high rank is available for administrative position in public health; trained in public health before entering Army; considered one of the outstanding commanders of general hospitals; leaders in military and civilian hospital and medical fields unite in recommending him as outstanding administrator, well able to serve as administrator for metropolitan city or large area; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Dentist, Veteran World War II; certificate from Forsyth Infirmary for Children; several years, public health experience and two years' private practice before joining Armed Forces; available immediately; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Health educator; Master of Science degree in public health; thorough knowledge in general public health (administration, biostatistics, epidemiology, industrial hygiene, dental hygiene, tuberculosis and venereal disease control, etc.) and in principles, methods and functions of public health education; record of interesting administrative experience; for further information please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nurse; B.S. degree with major in public health nursing; professionally trained in university school of nursing; five years' supervising experience in public health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.



## NEWS FROM THE FIELD

### INTERNATIONAL ACTION IN THE FIELD OF PUBLIC HEALTH

The Economic and Social Council of the United Nations has recently adopted a resolution regarding an International Health Conference. A meeting of a technical preparatory committee was called to meet in Paris, France, not later than March 15, and instructions were given to call the conference of the United Nations to consider the scope of and the appropriate machinery for international action in the field of public health not later than June 20, 1946, at a place to be fixed in consultation with the President of the Economic and Social Council.

Experts from 17 different countries are to attend the meeting of the preparatory committee. Thomas Parran, M.D., Surgeon General of the U. S. Public Health Service, has been designated the United States Expert and James A. Doull, M.D., Medical Director, U. S. Public Health Service, has been designated alternate. Drs. Parran and Doull were expected to leave Washington on March 15 for the meeting. The resolution follows:

The Economic and Social Council, taking note of the Declaration proposed by the Delegations of China and Brazil at San Francisco and unanimously approved regarding an international health conference, and recognizing the urgent need for international action in the field of public health,

1. Decides to call a Conference of the United Nations to consider the scope of, and the appropriate machinery for, international action in the field of public health and the proposals for the establishment of a single international health organization of the United Nations;

2. Urges the Members of the United Nations to send as representatives to this Conference experts in public health;

3. Establishes a technical Preparatory Committee to prepare draft annotated agenda and proposals for consideration of the Conference, and appoints the following experts or their alternates to constitute the Committee;

4. Directs the Technical Preparatory Committee to meet in Paris not later than March 15th and to submit its annotated agenda and proposals to the members of the United Nations and to the Council not later than May 1st.

5. Decides that any observations it may make at its second session on the report of the Technical Preparatory Committee will be communicated to the proposed international Conference.

6. Instructs the Secretary General to call the Conference not later than June 20th, 1946, at a place to be fixed in consultation with the President of the Economic and Social Council.

### DR. STEBBINS RESIGNS AS NEW YORK CITY COMMISSIONER OF HEALTH

The resignation of Ernest L. Stebbins, M.D., M.P.H., who has been Commissioner of Health of New York City since July 15, 1942, was announced March 4 by Mayor O'Dwyer, who at once appointed Edward M. Bernecker, M.D., as Commissioner of Health to succeed Dr. Stebbins.

Dr. Stebbins when appointed was Professor of Epidemiology at the Columbia University School of Public Health, New York City, having previously served on the staff of the New York State Department of Health in several capacities, and in Virginia as a county health officer. Dr. Stebbins is a graduate of Rush Medical College in

Chicago in 1930, and holds the M.P.H. from Johns Hopkins University School of Hygiene and Public Health. His appointment as Professor of Public Health Administration at Johns Hopkins has been announced effective July 1, 1946, when he will succeed Allen W. Freeman, M.D., on his retirement.

Dr. Bernecker was born in 1892, and is a graduate of the Hahnemann Medical College and Hospital, Chicago, 1915. He has served with the New York Department of Hospitals for about 30 years, having served as Commissioner of Hospitals since 1942. Dr. Bernecker's successor as Superintendent of Hospitals is William F. Jacobs, M.D., who has been Medical Superintendent of Bellevue Hospital, New York City.

#### VOLUNTARY MEDICAL CARE PLAN OF AMERICAN MEDICAL ASSOCIATION

According to an announcement dated February 16, 1946, the American Medical Association is developing a country-wide system of voluntary sickness insurance protection to be operated on a non-profit basis by local medical groups. Details of the program will be worked out and administered by a director and staff of a newly created Division of Prepayment Medical Care Plans of the Association.

Four standards of acceptance by the American Medical Association Council on Medical Care for voluntary prepayment medical and hospital care plans were adopted as follows:

1. Approval of the state or county medical society in the area in which they operate
2. Responsibility for the medical services included in the benefits assumed by the medical profession in the area
3. Free choice of a qualified physician and maintenance of personal confidential relationship between patient and doctor
4. Operation to provide the greatest possible benefits in medical care to subscribers

Details of the program were announced in the *J.A.M.A.* for Feb. 23.

It has already been determined that premiums may vary in different parts of the country; nor need method of paying benefits be uniform; they might be in terms of either cash indemnity or in units of medical service.

A subsidiary organization, Associated Medical Care Plans Inc., made up of participating insurance groups, will undertake to establish coördination and reciprocity among the various local plans to permit transference of subscribers from one plan to another and use of benefits in any state in which a subscriber happens to be located. This subsidiary group will undertake research, compile statistics on medical care, provide consultation and information on existing plans, and sponsor an educational program to acquaint the public with the voluntary insurance program.

#### ROCKEFELLER FOUNDATION GRANTS \$78,500 FOR COÖRDINATION OF VOLUNTARY HEALTH AGENCIES

To support a program of coördinating the 20,000 voluntary health agencies of the country, the Rockefeller Foundation has granted \$78,500 to the National Health Council, New York, N. Y., with which the Council, under the leadership of a Citizens' Planning Committee and an outstanding new director to be selected, plans facilities for joint planning, joint activities and services for the national agencies, the organization of new and the strengthening of established local health councils, and a counselling field service to local agencies. Demonstrations in the coördination of local health agencies will be carried on, as well as coöperation with Community Chests and Councils in unified fund-raising campaigns for those national health agencies wishing to join in a United effort.

Commenting on the Foundation's grant, Eleanor Brown Merrill, President of the National Health Council,

said "The grant presents a great opportunity to accomplish needed coördination in the whole voluntary field. The Council will be able to assume the dynamic leadership for which the national situation, as well as the local agencies, have been calling. There are few projects which should have a more constructive effect upon the future health of the American people."

A Rockefeller Foundation grant made possible the establishment of the National Health Council in 1921. It also financed the 4 year Gunn-Platt study, the report of which, *Voluntary Health Agencies*, was published in September, 1945. In focusing attention upon the unevenness and weakness in the accomplishment of many local agencies it has already stimulated a number to appraise their work and to seek guidance and counsel. The new program of the National Health Council will make it possible to provide consultation services.

#### ANNIE WARBURTON GOODRICH—80 YEARS

To mark her 80th birthday, the *American Journal of Nursing* and four hundred leaders in nursing, public health, science and medicine honored Annie W. Goodrich with a luncheon in New York on February 26. A handsome brochure summarized her achievements, beginning in 1893, when she became Superintendent of Nurses of New York Post-Graduate Hospital down to 1934, when she retired as Dean of the Yale University Nursing School which she had organized in 1923. In the years between she had been Superintendent of Nurses at St. Luke's and New York Hospitals, taught at Teachers College, headed the Nurse Training School of Bellevue Hospital, inspected nurse training schools for the New York State Department of Education, directed the Henry Street Visiting Nurse Service, and organized the Army School of Nursing during the first World War.

She has studied nursing conditions in both Europe and the Orient, holds numerous honorary degrees, and has been awarded the Medaille d'Honneur de l'Hygiene Publique and the Silver Medal of the Ministry of Social Welfare by France. At present she is a member of the Board of Nursing Advisors of the Yale Institute of Living.

Among those who signalized her contributions to nursing education and nursing service were Professor C.-E. A. Winslow, Dean Alonzo Curran of the Long Island College of Medicine, John H. Hayes, President Elect of the American Hospital Association, and Mary Elizabeth Tennant of the Rockefeller Foundation. Pearl McIver presided.

Dr. William P. Shepard, on behalf of the American Public Health Association and its Committee on Professional Education sent greetings:

"Please accept congratulations on your many years of outstanding service to professional education in general and to nursing education in particular. It is amazing to reflect on the progress of nursing in the span of your lifetime. It is a privilege to tell you how much we appreciate your many valuable and lasting contributions to this progress. We who are interested in attracting superior people to the public health field and in making public health careers more attractive salute you and gratefully acknowledge your achievement and assistance."

#### \$200,000 FOR TROPICAL DISEASE RESEARCH

The Department of Public Health and Preventive Medicine of Cornell University Medical College has begun a ten year program of research in the "immunologic and allergic manifestations of exotic disease, and to provide for a better understanding of their prevention and treatment in relation to other allergic diseases." This study is made possible by a grant of \$20,000 annually for ten years from the Marcelle Fleischmann Foundation, organized by E. M. Fleischmann of Baltimore in

memory of his wife. The Foundation is interested primarily in allergic diseases and their various manifestations.

Wilson G. Smillie, M.D., Director of the Department of Public Health and Preventive Medicine, in announcing the grant early in 1946, reported that research was already under way, under the leadership of Dr. Morton C. Kahn, Associate Professor of Public Health and Preventive Medicine, assisted by a staff of five. Such fields as malaria, filaria, and the schistosomes will be investigated.

#### CLEVELAND MUSEUM IN A NEW HOME

The February *Museum News* of the Cleveland Health Museum announces that its new home is being prepared for Spring occupancy. Three doors from the present location, the new building will provide for the expanding services of the Museum. Floor plans show how the building will be utilized for exhibits, classrooms, lecture halls, and other purposes.

#### FRIEND LEE MICKLE HONORED FOR TWENTY-FIVE YEARS OF SERVICE

Friend Lee Mickle, Sc.D., was recently honored by his associates in the Bureau of Laboratories, Connecticut State Department of Health, Hartford, in recognition of the completion of 25 years of service as Director of the Bureau. A gold wrist watch was presented to him by Earl K. Borman, Assistant Director of the Laboratory, on behalf of his colleagues. Dr. Mickle, formerly a member of the Executive Board, A.P.H.A., and Chairman of the Laboratory Section, is now Chairman of the Standard Methods Committee for Frozen Desserts and Ingredients.

#### AMERICAN PUBLIC HEALTH EXPERTS CALLED TO TOKYO

The authorities in charge of public health in Japan have announced that John R. Paul, M.D., Professor of Preventive Medicine at Yale University

School of Medicine, New Haven, and W. D. Hammon, M.D., Associate Professor of Epidemiology at George Williams Hooper Foundation, University of California, San Francisco, arrived on March 1 in response to an invitation to them to study the prevailing Japanese encephalitis and measures which may be used to prevent its spread to the occupying forces.

#### LUCILE PETRY BECOMES CHIEF, DIVISION OF NURSING, U. S. PUBLIC HEALTH SERVICE

The appointment of Miss Lucile Petry, who recently has been head of the U. S. Cadet Nurse Corps, as Chief of the new Division of Nursing of the U. S. Public Health Service, has been announced by Dr. Thomas Parran, Surgeon General. She will rank as Nurse Director while serving as chief of a division. Miss Petry joined the Public Health Service in 1941 as nursing consultant and became director of the Cadet Nurse Corps in July, 1943. She is a graduate of the University of Delaware and of Johns Hopkins School of Nursing, and holds a Master's degree from Columbia University Teachers College.

According to Dr. Parran, the Division of Nursing in addition to being responsible for administration of the Cadet Nurse Corps will coördinate all nursing activities of the Public Health Service. It is a recognition of the great importance of nursing activities as part of the total health program. The responsibilities of the division will include public health nursing, hospital nursing, and nurse education. The senior assistants to Miss Petry will include Pearl McIver, R.N., Jessie MacFarlane, R.N., Minnie E. Pohe, R.N., Claire H. Favreau, R.N., and Mary J. Dunn, R.N.

#### HERMANN M. BIGGS MEMORIAL LECTURES The New York Academy of Medicine

has announced that the Hermann M. Biggs Memorial Lecture which is held annually in Hosack Hall at the New York Academy of Medicine under the auspices of the Committee on Public Health Relations will be delivered this year on Thursday, April 4 at 8.30 P.M. by Laurence H. Snyder, Sc.D., Professor of Medical Genetics, Department of Medicine, Ohio State University.

The subject of the lecture will be "Medical Genetics and Public Health."

This lecture is open to the general public.

#### MASSACHUSETTS PUBLIC HEALTH ASSOCIATION OFFICERS FOR 1946

*President*, Charles F. Wilinsky, M.D., Boston  
*1st Vice-President*, Vlado A. Getting, M.D., Belmont  
*2nd Vice-President*, Edwin H. Place, M.D., Bethesda, Md.  
*Secretary*, May C. Welch, Malden  
*Treasurer*, Catharine Atwood, Boston

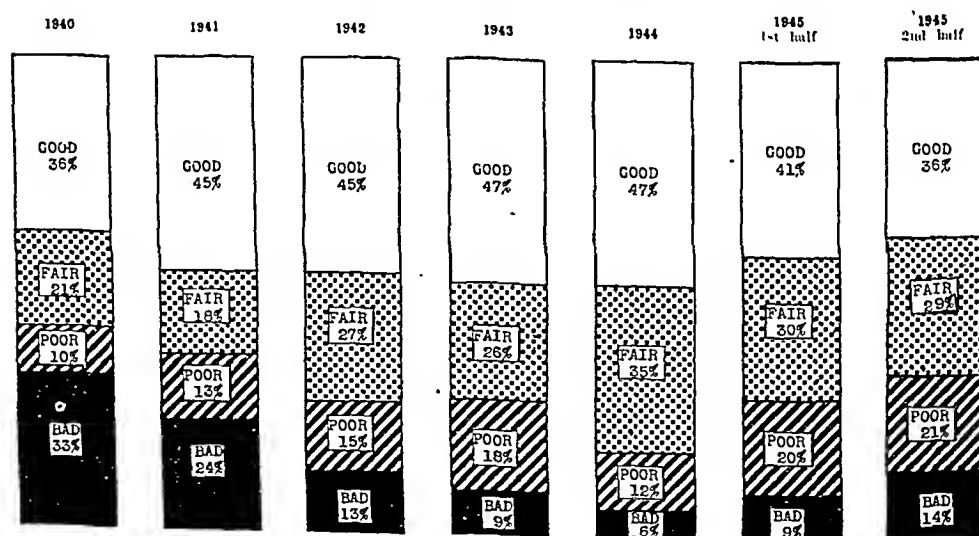
*Representative to Governing Council of A.P.H.A.*, L. Jackson Smith, M.D., Springfield

#### FEDERAL BILLS PROPOSE CONTINUING SOCIAL PROTECTION DIVISION

The American Social Hygiene Association, New York City, is sponsoring the continuation in peace time of the federal services to the states provided since early in 1941 by the Federal Security Agency's Social Protection Division. Two bills have been introduced into Congress (H.R. 5234 by Representative Bolton and S. 1779 introduced by Senators Pepper, George, LaFollette and Taft). In connection with its promotion of these bills, the A.S.H.A. has published an analysis of a series of 2,276 studies in more than 1,100 communities near which members of the armed forces are stationed. This report is republished with permission of the A.S.H.A.

#### PROGRESS IN THE REPRESSION OF COMMERCIALIZED PROSTITUTION

*An analysis of a series of 2,276 studies made by the American Social Hygiene Association, January 1, 1940—December 31, 1945, in 1,170 communities near which members of the armed forces are stationed*



NOTE: In arriving at an opinion as to whether conditions in a given community should be classified as "good," "fair," "poor" or "bad," a number of closely related factors had to be taken into consideration. Briefly these are: (1) size of the community; (2) actual amount of prostitution activity found at time of survey; (3) accessibility of prostitutes, whether hard or easy to find. These factors are considered together to provide the basis for classification.

NATIONAL INSTITUTE OF HYDROLOGIC  
AND CLIMATIC MEDICINE

IN HAVANA

The inauguration on the grounds of the Finlay Institute of the National Institute of Hydrologic and Climatic Medicine was announced by Dr. Luis Espinosa y G. Caceres, of the Ministerio de Salubridad y Asistencia Social, Cuba. Dr. Victor Santamarina is in charge.

COLONEL THOMAS B. TURNER AWARDED  
LEGION OF MERIT

Colonel Thomas B. Turner, former Director of the Civil Public Health Division, Office of The Surgeon General, has received the Legion of Merit for his part in "some of the most important advances made in Preventive Medicine Service during World War II.

Commissioned into the Army Medical Corps as a Lieutenant Colonel in January, 1942, Colonel Turner was appointed Director of the Venereal Disease Control Division in the Office of The Surgeon General. In January, 1944, he was designated Director of the Civil Public Health Division, where he served until his separation from service in January.

Prior to his entrance into the Army, Col. Turner was Professor of Bacteriology and in charge of the Division of Venereal Disease in the Johns Hopkins University School of Hygiene and Public Health, and served as consultant in venereal disease to the Rockefeller Foundation.

COLONEL E. R. LONG AWARDED  
LEGION OF MERIT

Colonel E. R. Long, MC, Chief Consultant in Tuberculosis, Office of The Surgeon General, has been awarded the Legion of Merit for his work in the "initiation and development of standards and measures for the detection of tuberculosis."

Colonel Long's distinguished service in also establishing "priceless permanent

files of chest x-ray films of Army personnel," together with his methods of tuberculosis detection, was "of outstanding and lasting significance to the public health program of the country," according to the citation.

Commissioned into the Army as a Lieutenant Colonel in July, 1942, Colonel Long acted as Chief of the Tuberculosis Section, Medicine Branch, Medical Practice Division of The Surgeon General's Office. From July, 1943, until December, 1943, he was Chief of the Medicine Branch and had been promoted to Colonel. In January, 1944, he became Assistant Chief of the Professional Service and in August of the same year was assigned to his present position as Deputy Chief of the Professional Administrative Service. He was appointed Consultant in Tuberculosis in January, 1944.

During the past year he was visiting Consultant in Tuberculosis in the Mediterranean and European Theaters of Operation; Chief of the Tuberculosis Section of the Public Health Branch, Office of the Military Government, U. S. Zone, Germany; and Acting Director of the Tuberculosis Service, Veterans Administration.

Prior to entering the Army, he was Director of the Henry Phipps Institute and Professor of Pathology at the University of Pennsylvania.

STUDY CITY-COUNTY CONSOLIDATION

In Jefferson County, Alabama, which includes the City of Birmingham, a commission to study the question of city-county consolidation was organized late in 1945 under the authority of the 1945 legislature. The president of Howard University was elected chairman and the director of the Bureau of Public Administration at the University of Alabama. secretary. This commission is charged by law to report its findings to the 1947 session of the legislature. Some three years ago the Bureau of Pub-

lic Administration, at the request of the Jefferson County legislative delegation, made a survey of the feasibility of consolidating the county and city school systems.

DR. LEONARD A. SCHEELE RECEIVES U. S.  
TYPHUS MEDAL

The War Department, Washington, D. C., has announced that Dr. Leonard A. Scheele, Senior Surgeon, U. S. Public Health Service, has been awarded the United States of America Typhus Commission Medal for "exceptionally meritorious service in connection with the work of the Typhus Commission during the period 1944-1945 in the European Theater of Operations. As Chief of Preventive Medicine Section, Public Health Branch, G-5, Supreme Headquarters, Allied Expeditionary Forces, Dr. Scheele took an important part in the development of policies, the determination of plans, and the accumulation of supplies essential for typhus control among refugees and displaced persons in zones of Northwest Europe regained from the Germans by British and American forces. Through his personal qualities he inspired coöperation and coördination between agencies, international as well as American, civilian as well as military, and groups concerned with typhus control in these regions. His contributions aided directly in preventing the spread of typhus in Northwest Europe."

Dr. Scheele has returned to the National Institute of Health and is serving as Assistant Chief of the National Cancer Institute, Bethesda, Md.

U. S. ARMY ANNOUNCES NEW ANTI-  
MALARIAL DRUG

The Surgeon General of the U. S. Army announced in February that the new anti-malarial drug, SN-7618, which the Army Medical Department played an important part in developing, has been found to be superior in many ways

to quinine or atabrine. Studied in collaboration with the Interservice Board for the Coördination of Malarial Studies, SN-7618 was tested in experiments at Harmon General Hospital, Longview, Tex., and Moore General Hospital at Swannanoa, N. C., in addition to some overseas theaters of operations.

Designed to obtain information on the value of the drug in controlling the symptoms and fever occurring in acute attacks of malaria, these studies included the observation of more than 600 malaria-stricken soldiers, who were given different amounts of the drug in from one to seven days. When notations had been made of symptoms such as the passing of the fever and the disappearance of malarial parasites from the blood stream, the patients were kept in the reconditioning section to determine the possibilities and time intervals for relapse. Comparisons were made of the results with those obtained in similar studies of atabrine, quinine, and other new drugs. It was found that one day's treatment with SN-7618 promptly controlled fever and other symptoms, and that the parasites rapidly disappeared from the blood.

Observation periods of four months showed that 75 per cent of the men tested suffered relapses. Though this number is similar to that found in experiments with quinine and atabrine, the interval between attacks was found to be longer when SN-7618 was used. Patients soon acquired a preference for the drug because of its rapid action, which permitted them to leave the wards within two or three days. Though SN-7618 is considered superior to other anti-malarial drugs in that it does not discolor the skin, upset the stomach, or cause a buzzing in the ears, it is not a one-treatment cure for vivax malaria. Weekly doses of the drug can be taken to avoid relapse after an acute attack, but upon discontinuation of the treatment further relapses may occur.

SN-7618 was so named because it was the 7618th drug tested in the four year program sponsored by the Committee on Medical Research. The program was financed by the Office of Scientific Research and Development.

#### CHANNELS FOR OVERSEAS FOOD RELIEF

Inquiries which have reached the office of the American Public Health Association as to approved channels for providing food for overseas relief have prompted inquiries on behalf of those who are desirous of adding private subscriptions to the public effort.

The Victory Collection of Canned Food, conducted by the Community Canning Program for Overseas Relief and on behalf of the United Nations Relief and Rehabilitation Administration, has offices at 100 Maiden Lane, New York 7, N. Y. This agency through UNRRA channels is prepared to expedite the distribution of foods throughout Europe, Asia, and the Philippines and wherever UNRRA channels are in operation. According to the statement by this organization, there are more than twenty-eight million persons in Europe alone who will get less than 1,500 calories per day and large groups who will receive as little as 1,000 calories, or one-half enough for subsistence. Contributed canned food will be distributed free overseas and funds for the purchase of food may be sent to the Victory Food Collection at the above address.

#### NEW YORK ACADEMY OF MEDICINE INSISTS ON STANDARDS FOR COMMISSIONER

*Resolution adopted at a meeting of the Committee on Public Health Relations of The New York Academy of Medicine, March 11, 1946*

RESOLVED, That with the approval of the President of the Academy the following statement be sent to the Mayor of the City of New York.

Upon the recommendation of its

Committee on Public Health Relations which has given this matter serious consideration, The New York Academy of Medicine desires to call the attention of Mayor O'Dwyer to the fact that his recent appointment of a successor to Dr. Ernest L. Stebbins is contrary to paragraph 551b of Chapter 22 of the Charter of the City of New York which requires that the Commissioner of Health shall have had at least 8 years' experience either in public health administration or teaching or both. These mandatory qualifications of the City Charter are comparable to the training and experience required by the State of New York for health officers of all other cities in the State with a population of more than 50,000.

In pointing out that Dr. Edward M. Bernecker has not had the training or experience in public health administration or teaching required by the Charter, and therefore does not qualify under the Law for the position of Health Commissioner of the City of New York, the Academy has no intention of questioning his personal integrity or his qualifications as a hospital administrator. It wishes rather to indicate to the Mayor that experience in hospital administration is in no way equivalent to that training or experience in modern public health practice which a Health Commissioner requires in arriving at important decisions daily which may affect the health of almost eight million people. The appointment of a person not meeting the Charter qualifications as Health Commissioner of the City of New York constitutes a reversion to the public health standards of a past generation, before public health administration had developed into a complicated and highly skilled specialty, and before outstanding schools of Public Health had been established at the major universities of this country.

In the opinion of the Academy, the people of the City of New York de-



serve the services as Health Commissioner of the best qualified person available in this country. It was with this objective that the State of New York secured the services of its last Commissioner, Dr. Thomas Parran, who subsequently rose to be the Surgeon General of the United States Public Health Service, and that the City of New York secured the services of Dr. Ernest L. Stebbins who now leaves the employ of the City after a period of distinguished service, to become Professor of Public Health Administration and head of the great School of Public Health at the Johns Hopkins University.

The Academy, therefore, urges the Mayor to rescind his recent action, and to appoint as Commissioner of Health one who possesses the training and experience required by the City Charter and who will maintain and extend high standards of public health in this City, and, by example, throughout the Nation.

#### NORTHERN CALIFORNIA PUBLIC HEALTH ASSOCIATION OFFICERS FOR 1946

*President*, E. A. Reinke, Berkeley

*Vice-President*, Helen Hartley, Stockton

*President-elect*, Sanford Farnsworth, M.D., Oakland

*Secretary*, Margaret Beattie, Berkeley

*Treasurer*, Thomas M. Sperbeck, Marysville

#### RHEUMATIC FEVER FOUNDATION IN SYRACUSE

The Rheumatic Fever Foundation of Onondaga County, New York, was incorporated on October 26, 1945. As its first activity, a 40 bed composite medical center, home, school, and church for the care and treatment of children suffering from rheumatic fever and rheumatic heart disease was opened in Syracuse. The objectives of the Foundation are to maintain a hospital and dispensary for treatment, a coordinated clinic for the follow-up of discharged patients, to maintain a research laboratory, and to cooperate with other

agencies in the prevention, detection, and treatment of rheumatic fever and its complications. It has a seven-man board made up of two physicians and five laymen.

### PERSONALS

#### Central States

FRANCIS E. COLIEN, PH.D.,\* has been honorably discharged from the Sanitary Corps with the rank of Lieutenant Colonel, having served as executive officer and chief of the Laboratory Service in Sanitary Corps assignments. He returns to his former position as associate professor of bacteriology and public health and preventive medicine at Creighton University School of Medicine, Omaha, and as director of the Omaha Department of Health Laboratories.

JOHN M. HEPLER, C.E.,\* Director of the Bureau of Engineering, Michigan Department of Health, Lansing, recently spent several weeks in Puerto Rico at the School of Tropical Medicine, San Juan, lecturing on public health engineering and attending the meetings of the Puerto Rico Public Health Association.

LEWIS S. JORDAN, M.D., Granite Falls, Minn., was elected President of the Minnesota Public Health Association recently to succeed FRANCIS E. HARRINGTON, M.D.,† Minneapolis.

WALTER B. QUISENBERRY, M.D.,\* who recently completed a course at the Johns Hopkins School of Hygiene and Public Health, Baltimore, has been appointed Director of the State Division of Venereal Disease Control in Nebraska, succeeding REGINALD A. FRARY, M.D.,† resigned.

MARY E. W. SOULES, M.D.,† of Dickinson, No. Dak., was recently appointed Director of the Southwest District Health Unit which comprises the counties of Slope, Bow-

man, Golden Valley, Billings, Hettlinger and Adams.

LT. COL. JOHN T. TRIPP,\* Director of the Division of Biologic Products in the Michigan State Department of Health laboratories, Lansing, has returned from China where he spent 18 months under the Department of State Cultural Cooperation Program. Col. Tripp helped to set up a central laboratory in China for the standardization of biological products.

ROBERT YOHO,† who has been connected with the Indiana State Board of Health, has been appointed Director of the Division of Health and Physical Education.

#### Eastern States

BAILEY B. BURRITT † was elected President of the New York Tuberculosis and Health Association at the annual meeting of the Society in January.

SUE THOMPSON GOULD, M.D., M.S. P.H.,\* who has been Acting Commissioner of the Columbia County Department of Health, Hudson, N. Y., since 1942 has been named Commissioner for a six year term.

MORRIS B. JACOBS, PH.D.,† Senior Chemist in the New York City Department of Health, has been appointed chief of the Chemical Laboratory of the Department.

MORTON A. SEIDENFELD, PH.D.,† recently Lieutenant Colonel in the Division of Neuropsychiatry of the Surgeon General's Office, U. S. Army, has been appointed Director of Psychological Services for the National Foundation for Infantile Paralysis, New York City.

HARRY P. WAREHAM, Rochester, N. Y., has been appointed Executive Vice President of the American Society for the Hard of Hearing, Washington, D. C., effective March 1. Since 1919,

Mr. Wareham has been identified with Community Chest activities in Rochester and other cities.

The appointment of ISRAEL WEINSTEIN, M.D.,\* of New York City as Deputy Commissioner of Health, New York City Department of Health, succeeding FRANK A. CALDERONE, M.D., M.P.H.,\* was announced on March 6. Dr. Weinstein formerly was director of the Bureau of Health Education in New York City and more recently has served with the armed forces.

JOHN S. WHEELER, M.D.,† released December 1 from the Army with the rank of Major, has been appointed State Health Officer of New Hampshire, succeeding ALFRED L. FRECHETTE, M.D.,† Concord. MARY M. ATCHINSON, M.D.,† Acting Deputy Health Officer in the Department, has been appointed Deputy Health Officer.

CHARLES A. ZELLER, M.D., Superintendent of the Philadelphia State Hospital, has accepted the appointment as Director of the Michigan Department of Mental Health, effective March 1.

#### Southern States

##### CHANGES IN HEALTH PERSONNEL IN FLORIDA:

E. J. TEAGARDEN, M.D., has resigned as Director of the Division of Tuberculosis Control of the State Board of Health, effective December 31, 1945. DR. CLARKE W. MANGUN,† now Assistant, will serve as Acting Director temporarily.

J. O. BARFIELD, M.D.,† who has served for the past 5 years as Director of the Bay County Health Dept. with headquarters at Panama City, resigned December 15, 1945, to enter Government service.

ROBERT FAWCETT SAYRE, M.D., has been released from service in the

\* Fellow A.P.H.A.  
† Member, A.P.H.A.

Army Medical Corps and appointed Director of the Northern Florida Health District, with headquarters at Lake City, effective December 15, 1945.

JAY C. MILLER, M.D.,† of the U. S. Public Health Service, who has been Acting Director of the Bradford-Clay-Union Health Unit was transferred by the Public Health Service to a station in another State, effective January 3.

LORENZO L. PARKS, M.D.,† recently returned from foreign service, has been appointed Director of the Duval County Health Department with headquarters at Jacksonville. Dr. Parks, previous to his military service, was Director of the Bureau of Local Health Service.

#### CHANGES IN HEALTH PERSONNEL IN KENTUCKY:

GEORGE M. WELLS, M.D., Bowling Green, has returned to the Directorship of the Warren and Simpson County Health Departments, succeeding PAUL Q. PETERSON, M.D.,† who has been granted a scholarship in public health at the University of Michigan.

RAYMOND E. WEHR, M.D., Newport, has been named Health Officer of Campbell County.

FRANK K. SEWELL, M.D.,† has been named Health Officer for the Knox, Whitley and Laurel County Health District, succeeding RICHARD B. FULKS, M.D.,† Barbourville, who has been granted a fellowship to pursue a course in public health.

JOE W. SAVAGE of Charleston, W. Va., has been appointed Executive Director of the National Foundation for Infantile Paralysis, New York City. Mr. Savage, who recently was a major in the Army Air Corps, was for more

than 12 years Executive Secretary of the West Virginia Medical Association.

#### Western States

ISABEL M. GONZALES has been appointed to the position of Spanish Health Education Worker in the Denver Tuberculosis Society, Denver, Colo. She will organize the Spanish-speaking population in health activities.

LELAND E. POWERS, M.D.,† formerly of Seattle, Wash., who for the last year has served as chief medical officer of UNRRA in China, returned to the State of Washington in February to assume a connection at the University of Washington. Dr. Powers was formerly Washington State Health Officer.

#### CHANGES IN HEALTH PERSONNEL IN WASHINGTON STATE:

LEONARD A. DEWEY, M.D., upon his discharge from the Armed Services, returned to his work as Head of the Venereal Disease Control Section on February 1. DR. GEIDT, Head of the Epidemiology Section, took charge of Dr. Dewey's Section while he was away.

ROY M. HARRIS, who has been on Military Leave, returned to his former position as Chief of the Division of Public Health Engineering on February 8. EMIL C. JENSEN, who has been Acting Chief of this Division, has returned to his former position as Head of the Sanitary Engineering Section.

RALPH R. SACHS, M.D.,† was appointed Head of the Field Consultation Section in the Washington State Department of Health's Division of Local Health Services, on January 14. Dr. Sachs was formerly Public Health Supervisor for the Hanford Engineer Works, Washington's atomic bomb project.

\* Fellow A.P.H.A.

† Member, A.P.H.A.

RALPH L. NIELSON was recently appointed Director of the survey of hospital and health center facilities throughout the state and to formulate a plan for the coordinated development of hospital facilities. Mr. Nielsen was formerly Assistant Agriculture Economist for the Southwest Region of the U. S. Department of Agriculture and was stationed at Berkeley, Calif.

### Foreign

LT. COL. ROBERT C. HUME, M.D.,† now on terminal leave after his return from overseas duty as Public Health Officer for U. S. Military Government in Vienna, has joined the Medical Department of Standard Oil Company of New Jersey, with offices in New York City.

CAPT. THEODORE R. MEYER, MC, USNR,\* has returned from Greece after 10 months' duty as Officer in Charge of a special Navy epidemiological unit formed at the request of the Greek Government for the purpose of improving public health conditions in that country. Capt. Meyer is now on temporary duty in the Bureau of Medicine and Surgery, Navy Department. He was Health Commissioner of St. Louis County prior to his entry into active duty in the Navy in 1941.

FLORINE THOMASON, R.N., formerly Assistant Director of Nursing Service of the Eastern Area of the American Red Cross, has returned from 3 years of overseas duty with the Army Nurse Corps and is now Associate Director of the Volunteer Nurse's Aide Corps, with her office at Red Cross national headquarters, Washington, D. C.

### Deaths

The death of MRS. JESSE W. LAZEAR, widow of the Late DR. JESSE W.

LAZEAR of the U. S. Public Health Service, who died during his investigation of yellow fever in 1900, was announced in Santa Barbara, Calif., on February 26.

MAJOR WILLIAM HENRY LLOYD,† U. S. Army Medical Corps, Retired, died on February 14 at his home in Mt. Victoria, Md., of coronary thrombosis. He was in his 69th year.

### RESUMPTION OF CONFERENCE CALENDAR WITH THE APRIL JOURNAL

The Calendar of Conferences and Dates which the *Journal* carried until the ban on conventions by the Office of Defense Transportation last year, was useful to many persons. Now that conventions are being held again, it is being resumed with this issue. The Editors will welcome information about future meetings of state, regional, or national interest.

### CONFERENCES AND DATES

American Medical Association. San Francisco, Calif. July 1-5.

American Public Health Association — 74th Annual Meeting. Cleveland, O. November 12-14.

American Water Works Association—1946 Conference. St. Louis, Mo. May 6-10.

Pacific Northwest Section—Gearhart Hotel, Gearhart, Ore. May 23-24.

National Conference on Social Work. Buffalo, N. Y. May 19-25.

National Education Association. Buffalo, N. Y. July 1-5.

National Probation Association. Buffalo, N. Y. May 17.

National Tuberculosis Association—Annual Meeting. Buffalo, N. Y. June 11-13.

New York State Association of Public Health Laboratories—Annual Meeting. State Laboratory, Albany, N. Y. May 17.

New York State Association of Health Officers and Public Health Nurses—Annual Conference. Grand Union Hotel, Saratoga Springs, N. Y. June 25.

Society of American Bacteriologists—1946 Annual Meeting. Hotel Book-Cadillac, Detroit, Mich. May 21–24.

West Virginia Public Health Association—1946 Annual State Health Conference. Prichard Hotel, Huntington, W. Va. May 2–4.



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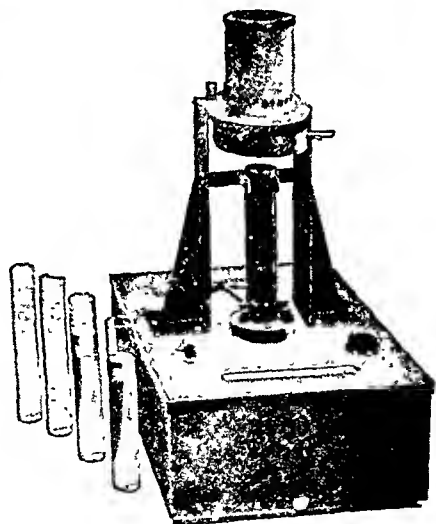
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# American Journal of Public Health

## and THE NATION'S HEALTH

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Volume 36

May, 1946

Number 5

## Acute Respiratory Disease Among New Recruits<sup>\*†</sup>

*Commission on Acute Respiratory Diseases ‡*

IT has long been recognized in the armed forces that new recruits experience an unusually high incidence of hospital admissions for respiratory diseases in contrast to seasoned men.<sup>1</sup> Although numerous factors have been considered to be important in causing this phenomenon, there has been a paucity of quantitative data by which these factors could be evaluated.

Studies of the Commission on Acute Respiratory Diseases at Fort Bragg, North Carolina, during the winter of

1942-1943<sup>2</sup> revealed that sharply defined epidemics of undifferentiated respiratory disease occurred with great regularity among newly inducted soldiers. Similar epidemics were not observed among seasoned men. These studies have now been extended to include observations over a period of two and one-half years. The incidence of respiratory diseases, as measured by hospitalized cases, has conformed to a characteristic epidemiological pattern, which helps to define the problem. In the present paper, the salient features of this pattern will be described and its implications regarding the nature of these diseases and the factors which influence their occurrence will be discussed.

### SOURCE OF DATA

The studies began in October, 1942, and have continued through 1945. Consistently throughout this period acute undifferentiated respiratory disease of unknown etiology has comprised the great majority of the hospitalized cases of respiratory disease, except during an epidemic of influenza A in December, 1943. Primary atypical pneumonia has been continuously pres-

\* From the Respiratory Diseases Commission Laboratory, Regional Station Hospital, Section 2, Fort Bragg, North Carolina.

† This investigation was supported through the Commission on Acute Respiratory Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, United States Army, and by grants from the Commonwealth Fund, the W. K. Kellogg Foundation, the John and Mary R. Markle Foundation, and the International Health Division of the Rockefeller Foundation to the Board for the Investigation and Control of Influenza and Other Epidemic Diseases for the Commission on Acute Respiratory Diseases.

‡ Members and professional associates of the Commission on Acute Respiratory Diseases are: John H. Dingle, Major MC, AUS, Director; Theodore J. Abernethy, Major, MC, AUS; George F. Badger, Major, MC, AUS; Joseph W. Beard, M.D.; Norman L. Cressy, Major, MC, AUS; A. E. Feller, M.D.; Irving Gordon, M.D.; Alexander D. Langmuir, Major, MC, AUS; Charles H. Rammelkamp, Jr., M.D.; Elias Strauss, Captain, MC, AUS; and Hugh Tatlock, Captain, MC, AUS.

ent in moderate incidence amounting roughly to 10 per cent of the respiratory admissions. These cases have been widely distributed throughout the post. Acute bacterial infections, such as hemolytic streptococcal pharyngitis and pneumococcal pneumonia have been sporadic and infrequent.<sup>3-6</sup> At no time have they contributed significantly to the level of the incidence rates for total respiratory disease.

The data reported in this paper have been obtained largely by tabulating the daily admissions to the respiratory wards, without attempting to separate these cases into diagnostic groups. Thus the figures are based on the initial impression at the time of admission that the patients were suffering from some form of respiratory disease. Repeated checks of this rather rough method of measuring incidence have revealed a 90 per cent or greater accuracy, when compared with the final diagnoses made at the time of disposition. Because diseases of known etiology have been infrequent, this method of counting total respiratory admissions provides a reasonably accurate measure of the incidence of acute undifferentiated respiratory disease. For convenience this group of illnesses of unknown etiology will be referred to by the contraction "ARD."

In addition to the data based on total respiratory admissions, certain other studies will be reported which serve to emphasize the main points derived from the broad scale data. These studies have been based either on final diagnoses of hospital cases, or on the results of detailed clinical, epidemiological, and laboratory investigations of selected organizations.

The organization in which most of the studies of new recruits have been made is the Field Artillery Replacement Training Center (FA-RTC). The trainees enter the FA-RTC directly from reception centers in all parts of the

United States. With few exceptions the men have had less than one month of military experience prior to their arrival, and the majority have been in the army less than 10 days. Most of the men arrive in groups of 1,000 and form a battalion which is divided into batteries of 250 men. A varying number of battalions, from 5 to more than 12, have been under observation.

The courses of basic training have varied. In 1942 and early in 1943 they were 6, 8, or 13 weeks in duration. Since the late summer of 1943, however, all courses of training have lasted for 17 weeks. Upon completion of training, the men are transferred to other stations and a new group of trainees is brought in. Thus, throughout the period of study there has been a staggered flow of large groups of trainees through the FA-RTC. This movement of troops provides a basis for continuing epidemiological studies which in many ways resemble the techniques which have been used in experimental epidemiological studies in animal colonies.

The other organizations at Fort Bragg comprise a wide variety of tactical and service units which are composed largely of well seasoned men.\* Many of these units have been under observation for 6 months or longer. Some of them have received small complements of new recruits from time to time. This was particularly true during the winter of 1942-1943.

#### INCIDENCE OF ACUTE RESPIRATORY DISEASE IN NEW RECRUITS AND SEASONED MEN

The weekly incidence rates of respiratory admissions in the FA-RTC and

---

\* A large majority of the seasoned men were members of combat Divisions and Field Artillery Battalions who were undergoing active field training similar to or more intensive than that being given to the new recruits in the FA-RTC. Only a small proportion of the men included among "other organizations" were service troops of the Station Complement.

RESPIRATORY ADMISSION RATES - FORT BRAGG, N. C.  
FA-RTC AND OTHER ORGANIZATIONS - 31 OCTOBER 42 TO 30 MARCH 45

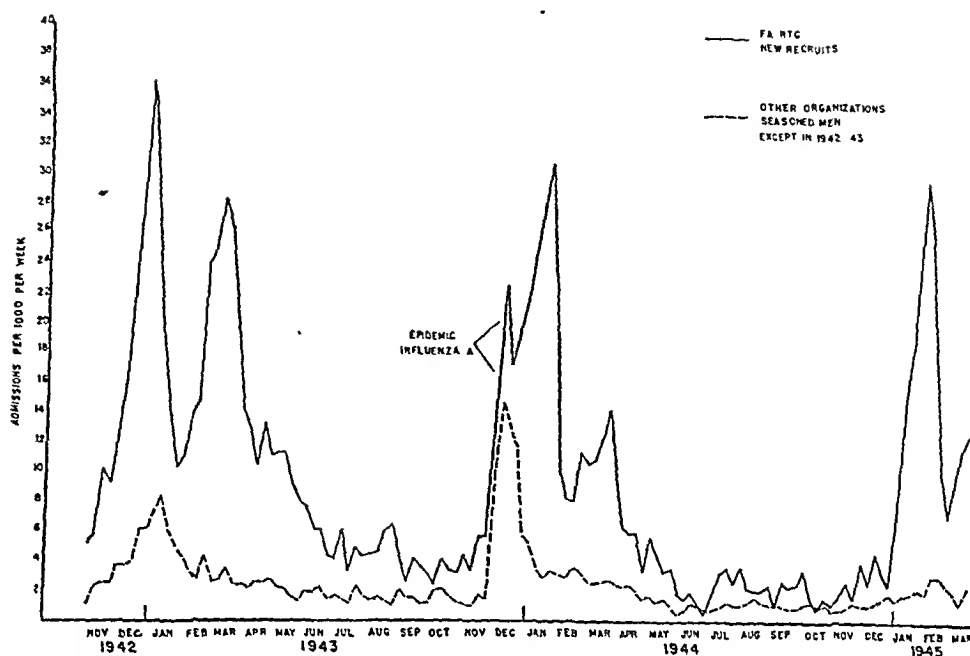


FIGURE 1—Respiratory Admission Rates, Fort Bragg, N. C., FA-RTC, and Other Organizations, October 31, 1942, to March 30, 1945

from the other organizations stationed at Fort Bragg are shown in Figure 1, from October, 1942, to March, 1945. Throughout this entire period the new recruits in the FA-RTC have experienced a consistently higher incidence of ARD than the seasoned men. During the summer the difference has been small, approximating a ratio of 2 to 1 or less. In the winter, the ratio has been as great as 10 to 1, or more. A sharp rise in respiratory admissions has occurred in December or early January, reached a peak, and then rapidly subsided in the course of 5 to 6 weeks. During this period recruits, in various stages of training, have been affected. Subsequent to this first wave secondary waves have appeared each year. These secondary waves have been determined solely by the rate of arrival of new trainees. In February and March, 1943, the secondary wave was severe because a large number of new recruits entered the FA-RTC at this time. In

1944 and 1945 the secondary peaks were lower because the movement of new recruits was proportionately reduced, due to the lengthening of the training period.

In the other organizations, composed largely of seasoned men, the incidence of admissions has remained constantly low with only 2 exceptions. Moderate increases were observed in the winter of 1942-1943. These were the result, in large part, of the addition of complements of new recruits to organizations of seasoned men. During December, 1943, the influenza A epidemic affected both new recruits and seasoned men in approximately equal severity, but with the subsidence of this epidemic the rates among the units of seasoned troops fell to a low level and remained low throughout the rest of the winter.

In the winter of 1944-1945 an increase among seasoned men was barely perceptible. No epidemics of specific infections were recognized and prac-



tically no complements of seasoned men were added to these tactical organizations during this winter.

This difference in incidence of respiratory admissions between the FA-RTC and the other organizations may be due in part to varying criteria for admission to the hospital. In the FA-RTC the principal criterion has been the presence of a fever of 100 degrees or more, while in some, but not all, of the other organizations, a somewhat higher fever has been the indication for hospitalization. This difference might possibly account for the 2 to 1 ratio observed in the FA-RTC during the summertime; but it does not explain the 10 to 1 difference during the winter because during the epidemic of influenza A the incidence of admissions among the two types of soldiers was approximately equal. Furthermore, varying criteria

of admission do not explain the high incidence observed among the complements of new recruits which have been added to seasoned organizations, because under these conditions both new recruits and seasoned men received medical care in the same dispensaries.

The curve of respiratory admission rates in the FA-RTC represents a composite of the experience of many battalions. Each battalion of new recruits has followed a characteristic pattern which varies with the season. During the winter a battalion of newly arrived recruits experiences a sharply defined epidemic of 3 to 4 weeks' duration. A typical example is shown in Figure 2. During the first week after arrival, the rates are usually moderately elevated. They increase sharply to a peak in the second or third week, and then rapidly subside, following which the rates re-

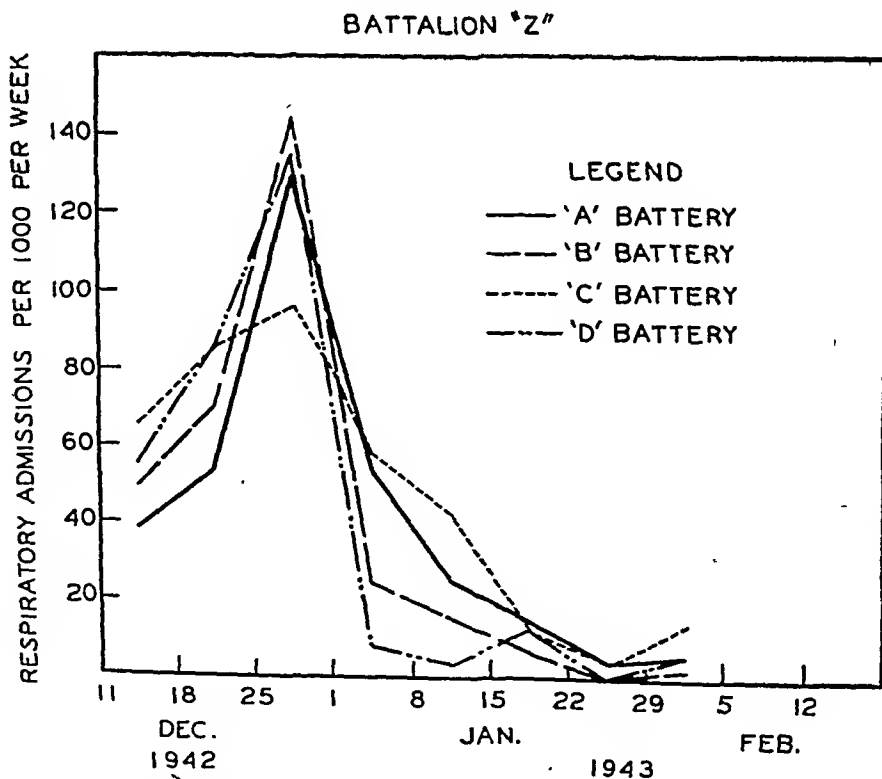


FIGURE 2—Respiratory Admission Rates per 1,000 per Week, Among Batteries of a Battalion of New Recruits, FA-RTC, December 12, 1942, to February 5, 1943

## 1942-1943

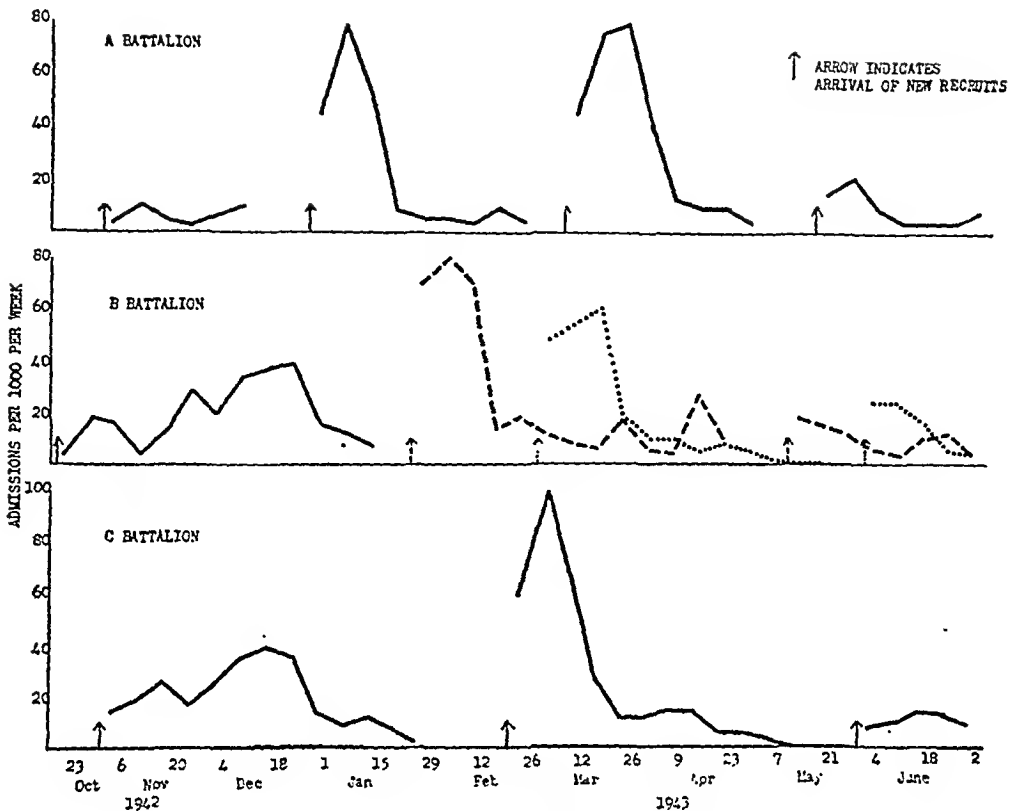


FIGURE 3—Respiratory Admission Rates per 1,000 per Week. Three Representative Battalions, FA-RTC, October 17, 1942, to July 2, 1943

main consistently low. From 15 to 30 per cent of the total strength may be admitted to the hospital within the first 4 weeks.

The consistency with which these epidemics occurred during the winter of 1942-1943 is shown in Figure 3. There was a striking similarity in the epidemics in each battalion of new recruits which arrived between the middle of December and the middle of April. During the spring months the epidemics declined in severity, and during the summer they were absent or barely discernible.

Battalions which begin training during the late summer and fall do not experience such epidemics until December or January, after they have completed from 1 to 3 months of training.

The epidemics which occur at this time are more irregular and less sharply defined, but the total admission rates are comparable with those of battalions which arrive during the winter. This phenomenon is shown in two of the battalions in Figure 3. It is brought out more clearly in the experience of subsequent years.

During the fall and winter of 1943-1944 two waves of respiratory diseases occurred among new recruits. These two waves are most clearly indicated in the battalions which were under continuous observation from October to February (Figure 4). During this period serological studies were performed on approximately 800 respiratory admissions. The first wave began on November 28 and extended through

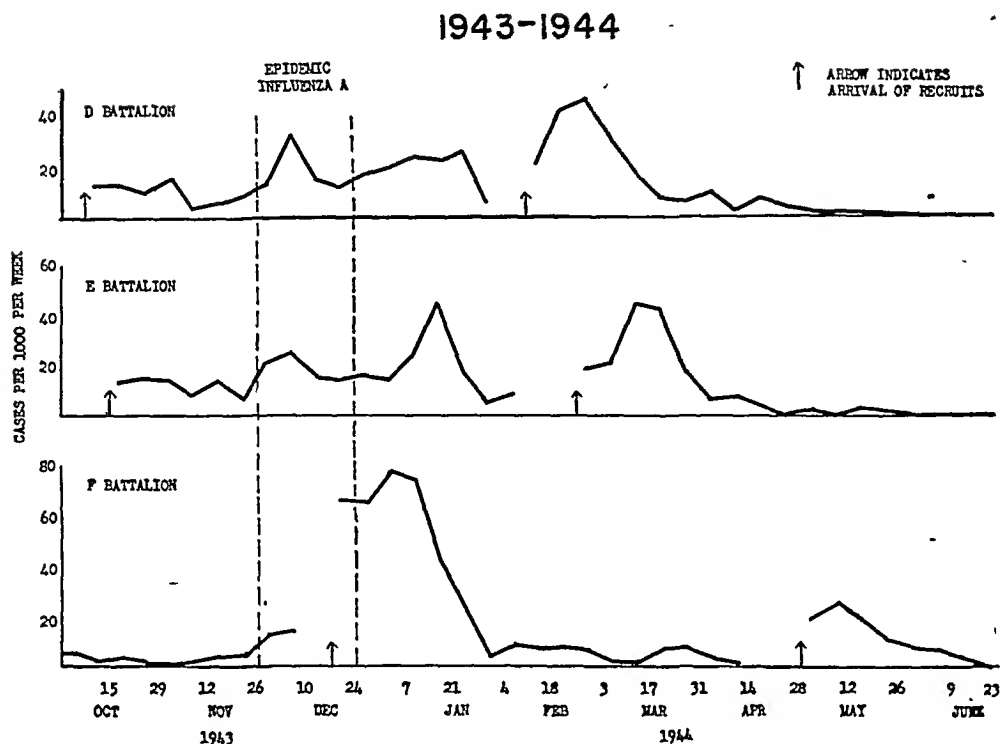


FIGURE 4—Respiratory Admission Rates per 1,000 per Week, Three Representative Battalions, FA-RTC, October 9, 1943, to June 23, 1944

December 24. From 80 to 90 per cent of all respiratory admissions during this wave showed significant increases in antibody titer to influenza A.

The second wave began late in December and extended through January. Less than 5 per cent of the respiratory admissions during the second wave showed evidence of influenza A by serological tests. The first epidemic, therefore, was due almost solely to influenza A and the second was an epidemic of ARD. Of special interest was "F" battalion (Figure 4), which was filled with new recruits during the middle of December as the influenza epidemic was subsiding. A severe epidemic occurred in this group immediately following its arrival. Serological studies of the respiratory admissions revealed that less than 10 per cent of the cases were influenza A. These few cases were concentrated in the first and second week of training. Thus the epidemic was not

influenza A, but rather 90 per cent of the cases were ARD. Presumably these new recruits had already had their experience with influenza virus A prior to their arrival.

The battalions which were formed from new recruits arriving in February and March experienced moderate epidemics of ARD similar to, though somewhat less severe, than those observed in late winter and spring of the previous year. The incidence pattern of ARD during the winter season of 1943-1944 was essentially similar to that observed in the previous year, when the superimposed epidemic of influenza A is taken into account. The longer period of training which the recruits were undergoing during this period revealed more clearly than was possible in the previous year that epidemics of ARD among men who arrived in October may not occur until January, after they have completed 3 months of basic training.

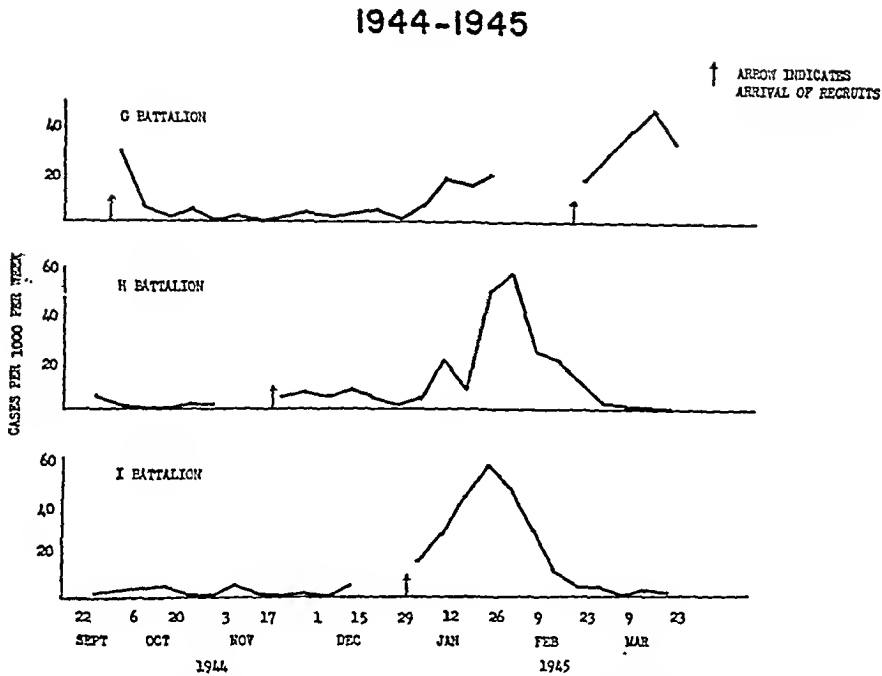


FIGURE 5—Respiratory Admission Rates per 1,000 per Week, Three Representative Battalions, FA-RTC, September 23, 1944, to March 23, 1945

In 1944-1945 the respiratory season began during the first week of January (Figure 5). Definite epidemics appeared in each battalion, approximately simultaneously, although there were marked differences in the period during which the battalions had been training. Throughout this respiratory season an extensive search was conducted for cases of influenza A and B, hemolytic streptococcal infection, and other specific diseases. Only sporadic cases were found. Over 90 per cent of the respiratory admissions were classified as respiratory diseases of unknown etiology.<sup>5</sup> Again the incidence pattern of ARD was similar to that observed in two previous years.

#### COMPARISON OF ARD WITH OTHER RESPIRATORY DISEASES

The characteristic differences in the epidemiology of ARD from other respiratory diseases may be emphasized by a comparison with three specific diseases which have been observed in epi-

demic form at Fort Bragg. These three diseases are influenza A, localized acute streptococcal pharyngitis, and German measles. During the fall and winter of 1943-1944 the respiratory admissions from "E" battalion were studied in detail<sup>6</sup> (see Figure 4). By means of serological and bacteriological tests it was possible to separate more than 90 per cent of the cases into three diagnostic groups, influenza A, streptococcus pharyngitis, and ARD. The weekly incidence of these diseases is presented in Figure 6.

The wave of influenza swept through this battalion in early December and rapidly subsided. The wave of ARD in January was equally distinct and almost twice as severe as the epidemic of influenza. In November and early December two sporadic cases of beta-hemolytic streptococcal pharyngitis occurred and in the last weeks of December a small outbreak of 10 cases developed. All of these 12 cases were caused by a specific strain of group A

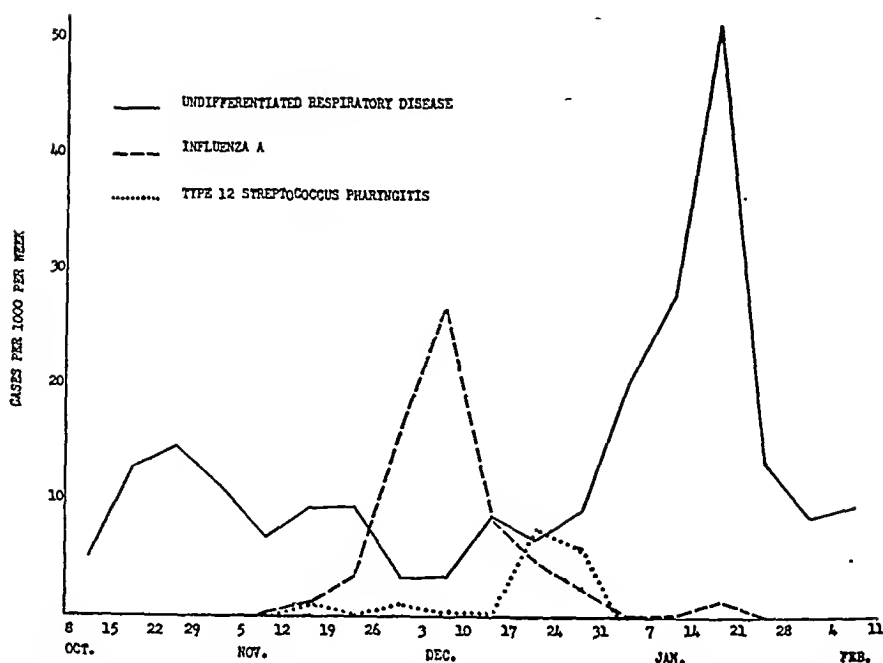


FIGURE 6—Weekly Incidence Rates of ARD, Influenza A, and Type 12 Streptococcus Pharyngitis in "E" Battalion, October 9, 1943, to February 11, 1944

hemolytic streptococcus, type 12. They were confined to four adjoining barracks. No other cases of streptococcal infection of any type were discovered in the remaining 12 barracks of the battalion during the 4 months of this study.

An epidemic of German measles occurred during the late winter and early spring of 1943.<sup>2</sup> Large numbers of cases appeared, not only in the FA-RTC but also among many organizations of seasoned men. During this period 9 separate groups of new recruits were under observation. In 7 of these 9 groups, the peak incidence of German measles occurred during the week ending March 26. In one group, an equal number of cases occurred during the weeks ending March 19 and March 26 and in only 1 group did the highest incidence of this disease occur earlier.

In Figure 7, the time of occurrence of German measles is contrasted to that of epidemic ARD in 5 representative battalions. The cases were clearly concentrated during the month of March.

This concentration appeared to be unrelated to the time of arrival of the recruits.

These 3 specific diseases, influenza A, German measles, and type 12 streptococcus pharyngitis all showed epidemiological features which were distinct and characteristic. The first 2 infections occurred in both seasoned men and new recruits. The third was sharply localized to a few barracks. During a 3 year period epidemics of influenza A and German measles have been observed only once, although scattered cases of these two infections were seen, both before and subsequent to these epidemics. No widespread epidemics of streptococcal infection have been observed in the FA-RTC and only a few localized epidemics, such as the one described, have been detected, although sporadic cases have been present in small numbers.

The epidemic waves of ARD in December and January bear some resemblance to the waves of influenza A and

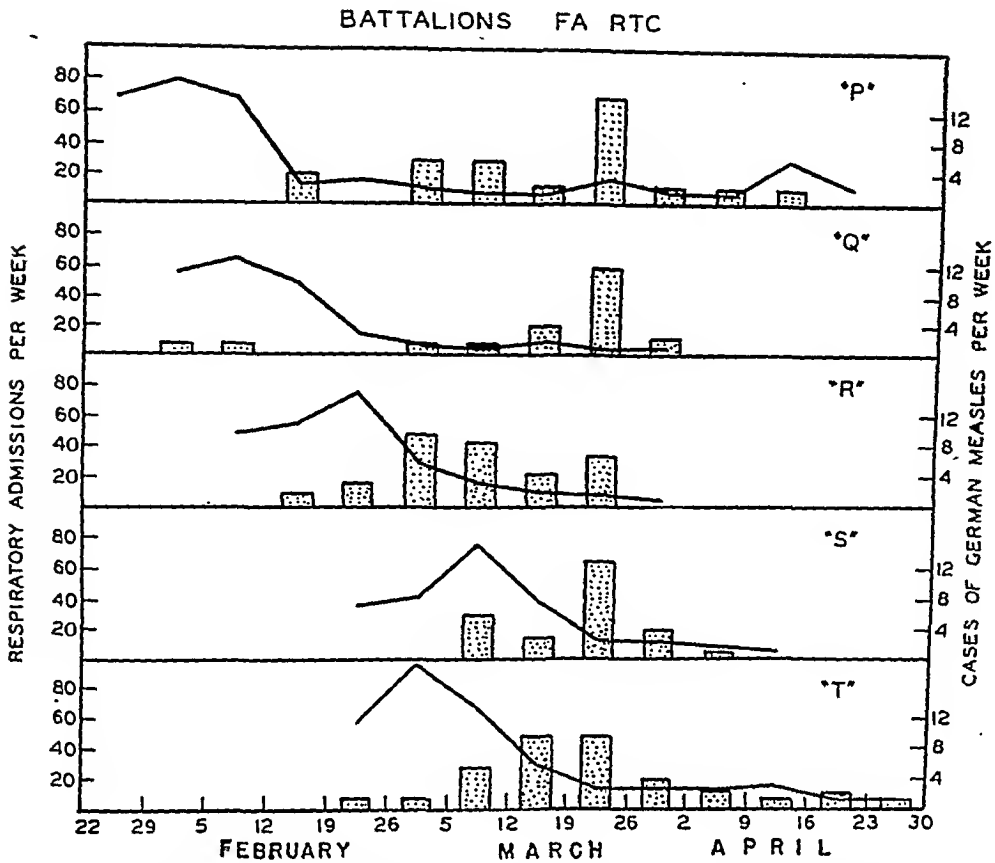


FIGURE 7—Incidence of Admissions for Respiratory Disease and German Measles in 5 Representative Battalions, FA-RTC, January 23 to April 30, 1943

*Reprinted from American Journal of Public Health*<sup>2</sup>

German measles in that they affect all organizations of new recruits in various stages of training. They are different, however, in that they do not affect seasoned men. Furthermore, they recur each year. Each group of new recruits which arrives, subsequent to the first wave, also is affected.

#### DISCUSSION

Acute undifferentiated respiratory disease (ARD) at Fort Bragg has shown characteristic epidemiological features over a period of three consecutive respiratory seasons. The pattern has recurred in a consistent manner each year and it has been distinct from that of certain diseases of known cause. These findings suggest that ARD is a specific disease process due to a single

or to a group of closely related agents.<sup>7</sup>

The sharply defined epidemics which occur during winter months among new recruits indicate that these men are highly susceptible to the disease. The rapid subsidence of the epidemics implies some form of an immunity mechanism. From the consistently low incidence following the epidemics it may be inferred that this immunity is maintained for several months. Absence of epidemics of ARD in seasoned troops at Fort Bragg suggests that the immunity lasts for a considerable period, possibly 1 to 2 years or longer.

Certain factors have been considered to be important in causing respiratory disease among soldiers. Among these are: (1) the exchange of nasopharyngeal flora among men who are brought to-

gether from different geographic regions; (2) exhaustion from the arduous physical training program; (3) reactions to the immunization procedures; and, (4) difficulties in psychological adjustment to military life.

The findings at Fort Bragg do not support any of these factors as having primary importance. The epidemics which occur at the beginning of the respiratory season among recruits who have been in training for several months cannot be explained by these factors. By this time the men are well adjusted to army life, the immunization program is completed, they are hardened physically, and the opportunity to exchange flora has been present for several months.

Another factor which is commonly thought to be important in the causation of respiratory disease is exposure to inclement weather. During the training period each battalion undergoes field exercises during which the men sleep in the field in all types of weather. Epidemics of ARD have occurred prior to, during, and subsequent to these field bivouacs in approximately equal severity. Since the rigors of life in the field may be excessive in contrast to life in garrison it would appear that exposure to the elements is not of primary importance in causing epidemics of ARD.

Unsanitary mess halls and inadequately washed dishes also have been much discussed as potential sources of spread of respiratory diseases. It is difficult to explain the epidemics of ARD at Fort Bragg on this basis. The mess halls of the FA-RTC have been notable for their consistently excellent sanitary condition. It is doubtful that the sanitary standards in more than 60 mess halls break down simultaneously each winter, or that in the late winter and spring only those mess halls serving newly arrived recruits are in an unsanitary state.

Although these commonly held beliefs do not appear to have been primary factors in causing epidemics of ARD at Fort Bragg, it is entirely possible that some of them may have been secondary or contributing factors that influence the severity and extent of the disease.

One factor of unquestioned importance in the occurrence of ARD is the season of the year. Epidemics have occurred at Fort Bragg regularly during the winter and early spring but none have been observed during the summer and early fall. Similar seasonal variations are well recognized for most acute respiratory and contagious diseases in temperate climates. The mechanism of this seasonal effect is an obscure and probably complex problem.

A limited amount of evidence suggests that these epidemiological findings may be applicable to other Army posts and possibly to civilian life. An almost identical pattern has been observed in one large Naval Training Station in New England.<sup>8, 9</sup> In many military installations which receive a constant flow of recruits rather than a staggered flow, such as that at Fort Bragg, the pattern is less apparent, but it has been shown that, during the winter months, new recruits are most susceptible to common respiratory diseases during the first 4 to 6 weeks of military life.<sup>10-13</sup> In many of these studies the epidemiological pattern has been complex, due to the epidemic occurrence of influenza A or B, acute streptococcal infections, and pneumococcal pneumonia.<sup>11, 14-20</sup>

Evidence that a similar pattern operates in civilian life is difficult to ascertain because of the great difference in the environment and living conditions. The waves of respiratory disease that are observed in schools<sup>21</sup> and colleges<sup>22</sup> may represent a modified form of the same phenomenon. It should be pointed out that these semi-isolated and semi-regimented civilian populations have some characteristics which are similar

to military organizations. It is questionable that the distinction between new recruits and seasoned men is generally applicable to civilian life. Much further study, under varying conditions, in different geographic regions, and over a period of years, will be necessary before the significance of the epidemiological pattern observed at Fort Bragg can be fully interpreted.

It should be reemphasized that the present observations are derived solely from a study of hospitalized cases of respiratory disease. Such cases represent only the severe form of illnesses which may be widespread among men who remain in the field. Furthermore, in addition to mild illnesses of the same specific nature as ARD, other types of respiratory illnesses which only rarely result in hospitalization may also be prevalent. Studies of dispensary cases, 1943-1944<sup>6</sup> and 1944-1945<sup>5</sup> showed that during the late summer and fall months the incidence of non-hospitalized cases of respiratory disease increased considerably without a corresponding rise in hospital admissions. Thus the incidence pattern of minor respiratory illnesses differs from that of hospitalized cases of ARD. This finding suggests that at least some of the minor illnesses may have resulted from a different specific cause.

It is impossible to determine whether the diseases which have been observed among new recruits at Fort Bragg correspond with the common forms of respiratory disease, such as the common cold, which are seen generally in civilian life. It is reasonable to suppose that they do, but the total lack of adequate means of differential diagnosis prevents the elucidation of this point.

These observations have been presented as deductions based primarily on epidemiological evidence. They are not considered as final conclusions but rather are presented in the hope that they may help to define some of the

problems in the study of acute respiratory disease of unknown etiology, and that they may aid in the interpretation of epidemiological and clinical investigations of specific respiratory diseases.

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#### REFERENCES

1. Dunham, G. C. *Military Preventive Medicine*. Medical Field Service School, Carlisle Barracks, Pa., 3rd Ed., Chap. III, 1938.
2. Commission on Acute Respiratory Diseases. Epidemiology of Atypical Pneumonia and Acute Respiratory Disease at Fort Bragg, N. C. *A.J.P.H.*, 34: 335-346, 1944.
3. Commission on Acute Respiratory Diseases. Endemic Exudative Pharyngitis and Tonsillitis. *J.A.M.A.*, 125:1163-1169, 1944.
4. Commission on Acute Respiratory Diseases. Role of Beta-Hemolytic Streptococci in Common Respiratory Disease. *A.J.P.H.*, 35:675-682, 1945.
5. Commission on Acute Respiratory Diseases and Commission on Air-Borne Infections. A Study of the Effect of Oiled Floors and Bedding on the Incidence of Respiratory Disease in New Recruits. *Am. J. Hyg.*, 43:120-144, 1946.
6. Commission on Acute Respiratory Diseases. The Effect of Double-Bunking in Barracks on the Inci-



dence of Respiratory Disease. *Am. J. Hyg.*, 43:65-81, 1946.

7. Frost, W. H. Epidemiology. Nelson Loose-Leaf System of Medicine, 2, Chap. 7:163-190, 1927. Reprinted in *Papers of Wade H. Frost*, New York, 1941, The Commonwealth Fund, see p. 495.

8. Breese, B. B., Stanbury, J., Upham, H., Calhoun, A. J., Van Buren, R. L., and Kennedy, A. S. Influence of Crowding on Respiratory Illness in Large Naval Training Station. *War Med.*, 7:143-146, 1945.

9. Jones, T. D. Personal Communication.

10. Wheeler, S. M., Ingraham, H. S., Hollaender, A., Lill, N. D., Gershon-Cohen, J., and Brown E. W. Ultra-Violet Light Control of Air-Borne Infections in a Naval Training Center. *A.J.P.H.*, 35:457-468, 1945.

11. Hodges, R. G. The Use of Sulfadiazine as a Prophylactic against Respiratory Disease. *New England J. Med.*, 231:817-820, 1944.

12. Bigg, E., Jennings, B. H., and Olson, F. C. W. Epidemiologic Observations on the Use of Glycol Vapors for Air Sterilization. *A.J.P.H.*, 35:788-798, 1945.

13. Anderson, P. H. R., Buchanan, J. A., and MacPartland, J. J. Oiled Floors to Control Respiratory Infection. An Army Experiment. *Brit. M. J.*, 1:616 (May 6), 1944.

14. Coburn, A. F. The Prevention of Respiratory Tract Bacterial Infections. *J.A.M.A.*, 126:88-92, 1944.

15 Bureau of Medicine and Surgery, Navy Depart-

ment, Washington, D. C. The Prevention of Respiratory Tract Bacterial Infections by Sulfadiazine Prophylaxis in the U. S. Navy. *Navmed* 284, 1943-44.

16. Holbrook, W. P. The Army Air Force Rheumatic Fever Control Program. *J.A.M.A.*, 126:84-87, 1944.

17. Feasby, W. R., and Bynoe, E. T. Survey of Hemolytic Streptococcus Infections at Camp Borden, Ontario, 1943. I. Epidemiology. *War Med.*, 5:207-215, 1944.

18. Hare, R., Hamilton, J., and Feasby, W. R. Influenza and Similar Respiratory Infections in a Military Camp over a Period of Three Years. *Canad. Pub. Health J.*, 34:453-464, 1943.

19. Stuart-Harris, C. H., Andrewes, C. H., Smith, W., Chalmers, D. K. M., Cowen, E. G. H., and Hughes, D. L. A Study of Epidemic Influenza: With Special Reference to the 1936-37 Epidemic. Med. Res. Council, *Spec. Rep. Series*, No. 228, London, 1938.

20. Thompson, S., and Glazebrook, A. J. Infectious Disease in a Semi-Closed Community. *J. Hyg.*, 41:570-615, 1941.

21. The School Epidemics Committee. Epidemics in Schools. An Analysis of the Data Collected During the First Five Years of a Statistical Inquiry. Med. Res. Council, *Spec. Rep. Series*, No. 227, 1938.

22. Bock, A. V. Clinical Observations, Complications, and Treatment of Acute Upper Respiratory Tract Infections. *Ann. Int. Med.*, 12:317-322, 1938.

# Pasteurization of Liquid Egg Products

## III. Destruction of Salmonella in Liquid Whole Egg\*

A. R. WINTER AND G. F. STEWART

*Iowa Agricultural Experiment Station, Poultry Husbandry Subsection, Ames, Iowa*

AND

VERNON H. McFARLANE AND M. SOLOWEY

*United States Department of Agriculture, Bureau of Agricultural and Industrial Chemistry, Microbiology Research Division, Philadelphia, Pa.*

THE presence of *Salmonella* organisms has been reported in hen, turkey, duck, goose, and pigeon eggs.<sup>1-6</sup> Less information is available in the literature concerning the occurrence of *Salmonella* in hens' egg products. Bornstein, *et al.*<sup>7</sup> reported the isolation of *S. senftenberg* from a sample of Chinese egg powder. Gibbons and Moore<sup>8</sup> isolated *S. bareilly*, *S. oranienburg*, *S. typhimurium*, *S. thompson*, *S. minnesota*, *S. pullorum*, *S. newport*, *S. manhattan*, and *S. potsdam* from samples of Canadian whole egg powder. Other isolations from egg powder have been reported.<sup>9, 10</sup>

Pasteurization affords an effective means of destroying microorganisms in liquid egg.<sup>11-14</sup> It would seem to be the most logical method of destroying *Salmonella* in liquid egg, i.e., if possible to do so without affecting the desirable

properties of the treated product. In December, 1944, the U. S. Army Quartermaster Corps wrote into their tentative specifications for powdered whole egg the requirement that "The liquid egg just prior to drying shall be preheated by the flash method to not less than 140° F."

Neither pasteurization nor thermal death rate temperature and time relationships necessary to destroy *Salmonella* in liquid whole egg has been previously reported in the literature to the authors' knowledge. Some data are available, however, regarding the destruction of *Salmonella* in eggs, liquid egg, and egg mixes during cooking. It has been found<sup>1</sup> that soft boiling, codding, or frying on one side did not always render an egg free from *Salmonella* organisms. Eggs artificially infected with *S. pullorum*<sup>2</sup> required a 5 minute boiling period to kill all of the organisms. Van Oijen<sup>5</sup> and Wedeman<sup>15</sup> recommended that duck eggs be boiled 10 minutes before use or the broken out liquid be heated at 149° F. for 20 minutes to destroy *S. enteritidis* and *S. paratyphi*, which are sometimes

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present. Merely bringing custard to a second boil, after the addition of a little thickening, was found to render it free from added *S. enteritidis*.<sup>16</sup> Custard pies to which the organism had been added before baking were free from the organism when they left the oven. Gibbons and Moore<sup>17</sup> used reconstituted egg powders, heavily contaminated with *S. bareilly*, *S. oranienburg*, and *S. typhimurium* in the preparation of scrambled eggs, omelets, sponge cakes, custards, and muffins. No *Salmonella* could be detected in the cooked foods. The scrambled eggs were prepared in 3 minutes and reached 179.6° F. The omelets were prepared in 4 to 5 minutes, and reached 201 to 208° F. A large custard was baked at 284° F. for 45 minutes. The muffins were baked 20 minutes at 410° F. The large sponge cakes were baked at 374° F. for 45 minutes.

The objective of the experiments described in this paper has been to determine pasteurization temperatures and times necessary to destroy different *Salmonella* types in liquid whole egg.

#### PROCEDURES

In the experiments which follow, batches of sterile or very low count *Salmonella*-free liquid whole egg were artificially inoculated with 40,000 to 1,000,000 *Salmonella* organisms per ml. Portions of each inoculated batch were then subjected to different pasteurization temperatures and times in an experimental pasteurizer, laboratory model.<sup>12</sup>

Twelve to 54 clean eggs with sound shells were used in the preparation of each batch of liquid. They were obtained from the Iowa State College *S. pullorum*-free flocks. The shell eggs were held a week at room temperature to make their age more comparable to eggs used in breaking plants. Preparatory to breaking, bacteria were removed from the shell surface by soaking

each egg in 1 per cent sodium hydroxide for 2 to 5 minutes, draining, dipping in 95 per cent alcohol and by flaming the adhering alcohol. Each egg was then broken separately into a sterile pint jar by cracking the shell on the edge and draining the contents into the jar. It was observed for appearance and odor. If normal, it was transferred to a sterile 2 quart jar. Any abnormal egg was discarded and the container replaced by a clean sterile one. The accumulated eggs in the larger jar were shaken to break the yolk membranes. The liquid egg was then passed through a hand homogenizer, strained through a double layer of cheesecloth, and poured into a sterile jar containing glass beads. After shaking the jar 100 times through a wide arc, a sample was removed for a plate count. The remaining liquid egg was then inoculated with a broth suspension of *Salmonella*. Melange and inoculum were quickly and violently shaken by hand 200 times. A sample was again removed for plating and then pasteurization operations were started immediately.

The inoculum for each of the *Salmonella* types was always prepared in the same manner. Different strains, 6 to 13, were grown in dextrose broth (Difco) at 37° C. One, 2, 3, and 4 day old cultures were made of each strain. Measured quantities of the broth cultures were combined to give a mixture of cells of different ages. Usually about 5 ml. of the well mixed composited broth suspension were used per 250 ml. of egg.

Uninoculated, inoculated (raw), and pasteurized samples were plated on tryptose glucose extract agar after the procedure outlined in the A.P.H.A. tentative methods for the microbiological examination of eggs and egg products.<sup>18</sup> Plates were incubated at 37° C. (98.6° F.) for 72 hours. In event only one or two colonies of doubtful nature appeared on a plate, they were fished and transferred to Kligler's

TABLE 1

Influence of Pasteurization Temperatures and Times on the Destruction of Some Group B and D Types of Salmonella in Liquid Whole Egg

Temp. ° F.	Group B						Group D		
	S derby			S typhimurium			S pullorum		
	Time Min	Number per ml	Destruc- tion %	Time Min	Number per ml	Destruc- tion %	Time Min.	Number per ml	Destruc- tion %
150	0 1	170	99 9	0 1	350	99 9	0 1	0	100.0
	0 2	20	99 9	0 1	5,350	99 7	0 1	0	100.0
	0 2	405	99 9	0 2	0	100 0	0 2	0	100.0
	0 3	0	100 0	0 3	0	100 0			
148	0 2	250	99 9	0 1	186,800	90 9	0 1	0	100.0
	0 2	5	99 9	0 2	0	100 0	0 1	0	100 0
	0 3	0	100 0	0 2	0	100 0	0 2	0	100.0
	0 3	0	100 0	0 7	0	100 0	0 3	0	100.0
146	0 2	4,300	98 3	0 3	4,450	99 8	0 1	45	99 9
	0 2	0	100 0	0 3	5	99 9		815	99.9
	0 3	0	100 0	0 8	0	100 0	0.3	0	100.0
	1 0	0	100 0	1 0	0	100 0	0 6	0	100.0
144	0 2	67,950	73 9	0 3	675	99 9	0 1	155	99.9
	0 3	0	100 0	1 0	0	100 0	0 1	970	99.5
	0 9	0	100 0	1 1	0	100 0	0 9	0	100 0
	1 1	0	100 0	1 2	0	100 0	1 1	0	100.0
142	0 8	50	99 9	0 7	245	99 9	0 1	18,100	92.6
	0 9	10,800	99 4	1 2	15	99 9	0 2	350	99 8
	1 2	0	100 0	1 5	0	100 0	0 9	0	100.0
	1 3	0	100 0	2 0	0	100 0	1 5	0	100.0
140	1 4	30	99 9	1 2	1,060	99 9	1 3	0	100 0
	2 1	3,900	99 8	2 2	10	99 9	1 5	0	100.0
	2 6	0	100 0	2 2	0	100 0	1 6	0	100.0
	3 0	0	100 0	2 4	0	100 0			
138	1 4	115	99 9	2 2	230	99 9	1 7	0	100 0
	2 0	33,450	98 3	2 5	215	99 9	1 8	0	100.0
	2 7	0	100 0	3 1	0	100 0			
	3.0	0	100 0	3 5	0	100.0			

iron agar (Difco) to which had been added 0.5 per cent sucrose, for determination of typical Salmonella reactions.

One hundred and sixty-four strains representing 16 Salmonella types isolated from egg powder were used in the pasteurization trials. Of these, 150 strains were isolated by the Microbiology Research Division (1943-1944) and were identified serologically by Dr. E. H. Spaulding, Temple University School of Medicine, Philadelphia, Pa. Fourteen strains consisting of one *S. montevideo*, four *S. oranienburg*, one *S. oregon*, three *S. tennessee*, and five *S. pullorum* were obtained from the Army Service Forces Seventh Service Command Medical Laboratory, Fort Omaha, Nebr.

## RESULTS

Typical findings obtained during representative pasteurization runs for the different Salmonella types are shown in Tables 1-5 and Chart 1. It was not difficult to destroy Salmonella by heat. Practical pasteurization temperature and time relationships resulted in total destruction.

Of the sixteen types studied (Table 5), *S. senftenberg* was most resistant to heat and *S. pullorum* least resistant (Chart 1). Four of the eleven strains of *S. senftenberg* did not produce a darkening of Kligler's iron agar. A mixture of these strains was more resistant to heat than a mixture of the other seven strains, which darkened the medium.

TABLE 2  
Influence of Pasteurization Temperatures and Times on the Destruction of Some Group C  
Types *Salmonella* in Liquid Whole Egg

Temp. ° F	S. bacilly				S. montevideo				S. oranienburg				S. oregon				S. tennessee			
	Time Min.	Number per ml.	Destr. %		Time Min.	Number per ml.	Destr. %		Time Min.	Number per ml.	Destr. %		Time Min.	Number per ml.	Destr. %		Time Min.	Number per ml.	Destr. %	
150	0.1	many			0.1	3,400	99.5		0.1	375	99.8		0.2	9,150	99.5		0.1	450	99.9	
	0.2	3,020	99.1		0.2	615	99.6		0.2	110	99.9		0.2	10	99.9		0.2	0	100.0	
	0.2	0	100.0		0.2	30	99.9		0.4	0	100.0		0.2	0	100.0		0.2	0	100.0	
	0.3	0	100.0		0.3	0	100.0						0.3	0	100.0		0.3	0	100.0	
148	0.2	many			0.2	8,500	94.4		0.3	0	100.0		0.2	2,350	97.5		0.2	460	99.9	
	0.2	490	99.9		0.2	505	99.9		0.5	0	100.0		0.2	35	99.7		0.3	995	99.9	
	0.3	0	100.0		0.2	0	100.0						0.4	0	100.0		0.3	0	100.0	
	1.5	0	100.0		0.3	0	100.0						0.5	0	100.0		0.7	0	100.0	
146	0.2	many			0.1	725	99.9		0.1	30	99.9		0.2	many			0.2	many		
	0.2	29,050	96.3		0.2	0	100.0		0.9	0	100.0		0.8	0	100.0		0.2	23,250	98.7	
	0.6	0	100.0		0.7	0	100.0		1.3	0	100.0		1.1	0	100.0		0.7	0	100.0	
	1.5	0	100.0														1.3	0	100.0	
144	0.9	0	100.0		0.2	0	100.0		0.1	58,850	82.8		0.2	many			0.2	17,850	99.0	
	1.4	0	100.0		0.7	0	100.0		0.9	0	100.0		0.9	0	100.0		0.7	0	100.0	
	1.6	0	100.0						1.2	0	100.0		1.2	0	100.0		1.4	0	100.0	
													1.3	0	100.0		1.5	0	100.0	
142	0.9	55	99.9		0.2	340	98.7		1.0	17,300	87.8		1.2	70	99.9		0.2	many		
	1.6	160	98.9		0.8	15	99.9		1.1	20	99.9		1.3	15	99.9		1.0	45	99.9	
	1.7	0	100.0		1.2	0	100.0		1.6	0	100.0		1.6	0	100.0		1.3	0	100.0	
	1.8	0	100.0		1.4	0	100.0		1.6	0	100.0		2.6	0	100.0		1.5	0	100.0	
140	1.9	0	100.0		0.2	5,345	79.0		1.2	175	99.9		1.1	200	99.9		1.0	60	99.9	
	3.0	0	100.0		1.7	0	100.0		1.3	100	99.9		1.7	760	99.7		1.4	3,000	99.8	
	3.1	0	100.0		1.9	0	100.0		1.5	0	100.0		2.1	0	100.0		1.7	0	100.0	
									1.8	0	100.0		2.8	0	100.0		1.8	0	100.0	
138	1.6	210	99.9		1.9	130	99.9		1.5	0	100.0		2.4	990	99.6		1.9	5,200	99.7	
	2.5	0	100.0		1.9	0	100.0		2.5	0	100.0		3.0	0	100.0		2.6	2,000	99.9	
	5.8	0	100.0		2.6	0	100.0						3.4	25	99.9		3.0	0	100.0	
													3.8	0	100.0		3.3	0	100.0	

TABLE 3  
Influence of Pasteurization Temperatures and Times on the Destruction of Some Group E  
Types *Salmonella* in Liquid Whole Egg

Temp. ° F	S. anatum				S. london				S. meleagridis				S. newington				S. sentjberg			
	Time Min.	Number per ml.	Destr. %	Time Min.	Number per ml.	Destr. %	Time Min.	Number per ml.	Time Min.	Number per ml.	Destr. %	Time Min.	Number per ml.	Time Min.	Number per ml.	Destr. %	Time Min.	Number per ml.	Time Min.	Destr. %
150	0.1	275	95.1	0.2	19,950	85.4	0.1	2,050	95.3	many	99.9	0.1	many	99.9	0.1	49,100	91.2			
	0.1	2,810	99.9	0.2	15	99.9	0.2	0	100.0	0	100.0	0.2	500	99.9	0.3	640	99.9			
	0.2	0	100.0	0.2	0	100.0	0.2	0	100.0	0	100.0	0.3	0	100.0	0.5	0	100.0			
	0.2	0	100.0	0.3	0	100.0	0.3	0	100.0	0	100.0	0.3	0	100.0	0.6	0	100.0			
148	0.2	120	99.9	0.3	20,600	84.9	0.1	545	98.7	295	99.9	0.2	295	99.9	0.4	2,240	99.8			
	0.3	140	97.5	0.4	495	89.9	0.2	0	100.0	0	100.0	0.2	5	99.9	0.9	60	99.9			
	0.8	0	100.0	0.9	0	100.0	0.4	0	100.0	0	100.0	0.4	0	100.0	1.6	0	100.0			
	1.0	0	100.0	0.9	0	100.0	0.5	0	100.0	0	100.0	0.9	0	100.0	1.7	0	100.0			
146	0.2	7,200	99.4	0.2	65	99.9	0.1	9,200	79.1	260	99.9	0.2	260	99.9	1.1	250	99.9			
	0.9	0	100.0	0.7	0	100.0	0.2	0	100.0	0	100.0	0.3	240	99.9	1.9	30	99.9			
	1.4	0	100.0	1.1	0	100.0	0.7	0	100.0	0	100.0	0.7	0	100.0	1.9	0	100.0			
	1.8	0	100.0	1.2	0	100.0	1.9	0	100.0	0	100.0	1.1	0	100.0	2.7	0	100.0			
144	0.2	10,150	99.2	0.2	14,550	99.1	0.1	8,650	80.3	1,405	99.7	0.2	1,405	99.7	2.0	250	99.9			
	1.0	0	100.0	1.1	0	100.0	0.2	295	99.7	3,600	99.8	0.3	3,600	99.8	2.7	58	99.9			
	1.4	0	100.0	1.3	0	100.0	0.7	0	100.0	0	100.0	0.7	0	100.0	3.6	0	100.0			
	1.8	0	100.0	2.1	0	100.0	1.5	0	100.0	0	100.0	1.2	0	100.0	3.9	0	100.0			
142	0.2	442,100	63.6	0.2	174,800	88.7	1.5	70	99.9	605	79.5	0.6	605	79.5	2.9	300	99.9			
	1.0	0	100.0	0.9	1,810	98.7	1.9	10	99.9	5	99.9	1.1	5	99.9	3.1	205	99.9			
	1.4	0	100.0	1.1	0	100.0	2.3	0	100.0	1.1	100.0	1.1	0	100.0	3.8	0	100.0			
	1.9	0	100.0	1.3	0	100.0	3.0	0	100.0	1.4	100.0	1.4	0	100.0	5.0	0	100.0			
140	1.0	645	99.9	1.3	4,885	99.5	0.9	2,450	99.9	20	99.9	1.3	20	99.9	2.4	2,000	99.8			
	1.2	50	99.1	1.3	0	100.0	1.5	45	99.9	1.4	100.0	1.4	0	100.0	4.4	535	99.8			
	1.7	0	100.0	1.4	0	100.0	2.5	0	100.0	1.5	100.0	1.5	0	100.0	6.7	0	100.0			
	1.9	0	100.0	2.2	0	100.0	3.0	0	100.0	1.6	100.0	1.6	0	100.0	8.8	0	100.0			
138	1.8	905	99.9	1.3	40	99.9	2.6	415	99.9	1.3	98.9	2.3	7,050	98.9	3.2	1,290	99.8			
	2.2	55	99.9	1.5	15	99.9	3.3	940	99.9	2.3	94.9	4.8	150	94.9	4.8	675	99.9			
	3.1	0	100.0	2.3	0	100.0	3.7	0	100.0	2.5	100.0	2.5	0	100.0	8.5	50	100.0			
	3.2	0	100.0	2.6	0	100.0	3.7	0	100.0	2.8	100.0	2.8	0	100.0	10.1	0	100.0			

TABLE 4

*Influence of Pasteurization Temperatures and Times on the Destruction of Some Types of Salmonella in Liquid Whole Egg*

Temp. ° F.	<i>S. cerro</i>			<i>S. kentucky</i>			<i>S. rubislaw</i>		
	Time Min.	Number per ml.	Destruc- tion %	Time Min.	Number per ml.	Destruc- tion %	Time Min.	Number per ml.	Destruc- tion %
150	0.2	10,450	99.5	0.1	235	99.9	0.1	805	99.9
	0.2	360	99.9	0.2	700	99.9	0.2	1,240	99.9
	0.3	1,215	99.9	0.3	0	100.0	0.3	0	100.0
	0.4	0	100.0	0.4	0	100.0	0.3	0	100.0
148	0.2	23,400	99.8	0.1	12,150	99.5	0.1	175,050	81.9
	0.4	5,320	99.8	0.3	140	99.9	0.3	10,610	98.8
	0.9	10	99.9	0.7	0	100.0	0.8	0	100.0
	1.3	0	100.0	0.7	0	100.0	1.0	0	100.0
146	0.9	70	99.9	0.1	342,900	86.9	0.1	72,900	92.5
	1.2	5	98.9	0.5	0	100.0	0.8	0	100.0
	2.0	0	100.0	0.5	0	100.0	0.9	0	100.0
	2.1	0	100.0				1.5	0	100.0
144	1.0	150	99.9	0.6	0	100.0	0.2	81,800	91.6
	1.2	30	99.9	0.9	15	99.9	0.6	0	100.0
	2.0	0	100.0	1.2	0	100.0	0.9	0	100.0
	2.1	0	100.0	1.7	0	100.0	1.1	0	100.0
142	1.0	1,200	99.9	0.7	0	100.0	0.6	6,370	99.3
	1.3	50	99.9	0.9	735	99.9	0.9	0	100.0
	2.3	0	100.0	1.4	0	100.0	1.7	0	100.0
	2.5	0	100.0	1.7	0	100.0	2.2	0	100.0
140	1.2	1,975	99.9	1.3	325	99.9	1.2	4,170	99.5
	2.4	205	99.9	1.4	0	100.0	1.3	14,250	99.3
	3.3	0	100.0	1.8	0	100.0	2.2	0	100.0
	4.8	0	100.0	2.3	0	100.0	2.6	0	100.0
138	3.1	105	99.9	1.2	15,400	99.4	2.4	8,550	99.6
	4.4	20	99.9	2.7	10	99.9	2.6	0	100.0
	4.5	0	100.0	2.7	0	100.0	3.9	0	100.0
	5.7	0	100.0	2.9	0	100.0			

Salmonella types commonly found in egg, namely, *S. pullorum*, *S. oranienburg*, *S. montevideo*, *S. tennessee*, *S. anatum*, *S. bareilly*, *S. typhimurium*, *S. meleagridis*, and the others tested (Table 5) with the exceptions of *S. senftenberg* and *S. cerro*, were completely destroyed at the following temperatures and within the following times:

	Minutes
150° F.....	0.3
148° F.....	0.8
146° F.....	0.8
144° F.....	1.2
142° F.....	2.0
140° F.....	2.6
138° F.....	3.7

The temperatures and times required

to kill *S. senftenberg* are shown in Table 3 and for *S. cerro* in Table 4.

#### DISCUSSION

Data in Tables 1-5 not only show the comparative efficiencies of different temperature and time combinations in destroying Salmonella organisms in liquid whole egg, but also show that Salmonella types differ in their resistance to the lethal action of heat. Since most of the pasteurization runs were made with cell suspensions composed from several strains of a given type, it is not possible to state definitely that some strains are more heat resistant than others. However, in the case of *S. senftenberg*, a mixture of four strains which did not darken

TABLE 5

*A Summary of the Effects of Pasteurization Temperatures and Times on the Destruction of Salmonella in Liquid Whole Egg*

Group →			B		C					D		E					Others		
Temp. ° F.	Time Min.	No. Strains →	derby	typhimurium	Bareilly	montevideo	oranienburg	oregon	tennessee	pullorum	anatum	london	melengridis	newington	senftenberg	cerro	kentucky	rubislaw	
			6	11	10	17	22	7	14	8	10	10	10	10	11	6	6	6	
150	0.1		x	x	x	x	x	x	x	0	x	x	x	x	x	x	x	x	
	0.2		x	0	x	x	x	x	0	0	0	x	0	x	x	x	x	x	
	0.3		0	0	0	0		0	0			0		0	x	x	0	0	
	0.4						0								x	0			
	0.5														0				
148	0.1-.2		x	x	x	x		x	x	0	x	x	x	x	x	x	x	x	
	0.3-.4		0	0	0	0	0	0	x	0	x	x	0	0	x	x	x	x	
	0.5-.9								0		0	0			x	x	0	0	
	1.0-1.4														x	0			
146	0.3-.4		0	x		0				0				x	x	x			
	0.5-.9			0	0		0	0	0		0	0	0	0	x	x	0	0	
	1.0-1.4														x	x			
	1.5-1.9														x				
144	0.5-.9		0		0	0	0	0	0	0			0	0	x	x	x	0	
	1.0-1.4			0								0			x	x	0		
	1.5-1.9														x				
	2.0-2.4														x	0			
142	0.5-.9		x	x	x	x	x	x	x	0		x	x	x	x	x	x	x	
	1.0-1.4		0	x	x	0	x	x	0		0	0	x	0	x	x	0	0	
	1.5-1.9			0	0		0	0	0				0		x	0			
	2.0-2.4																		
140	1.0-1.4		x	x			x	x	x	0	x	x	x	x	x	x	x	x	
	1.5-1.9		x	x	0	0	0	x	0		0	0	x	0	x	x	0	0	
	2.0-2.4		x	x				0							x	x			
	2.5-2.9		0	0									0		x				
138	1.5-1.9		x	x	x	x	0	x	x	0	x	x	x	x	x	x	x	x	
	2.0-2.4		x	x				x	x		x	0	x	x	x	x	x	0	
	2.5-2.9		0	x	0	0		x	x		0		x	0	x	x	0		
	3.0-3.4			0				x	0				0		x	x			
	3.5-3.9							0					0		x	x			

x = not all killed

0 = all killed

Kligler's iron agar was more resistant than a mixture of seven strains which produced a darkening effect.

The variations in the percentages of organisms killed at the same temperature and approximately the same time in repeated tests with the same *Salmonella* type may have been influenced by the variations in the cell concentrations of the inocula. Tanner and Dubois<sup>19</sup> and Watkins and Winslow<sup>20</sup> have reported that the greater the concentration of bacteria in an inoculum

the more difficult it was to destroy all the cells. The numbers of *Salmonella* organisms used in these trials were greater than would likely be encountered in properly handled commercial liquid whole egg. Therefore, from the standpoint of numbers of *Salmonella*, the tests were conducted under more severe conditions than would normally be encountered in the commercial pasteurization of liquid egg.

It was impossible to maintain the exact temperature and time relation-



ships in different trials because of variations encountered in operation of the experimental pasteurizer. This was especially true at the two highest temperatures, 148° F. and 150° F. The higher the temperature and the longer the time of operation, the greater was the formation of film on the inside of the preheater tubes. This made it necessary to vary the temperature of the preheater and rate of flow through it in order to have the egg at a given temperature at the end of the preheater. Because of the difficulty encountered with film formation in the proximity of 150° F., it would be more practical to

pasteurize liquid whole egg for the destruction of *Salmonella* at a temperature of 140° F. to 146° F.

A mixture of different aged cells was used in order to represent more nearly the conditions likely to be found in commercial liquid egg. Robertson<sup>21</sup> reported that, in general, cultures in the rapidly growing state were less resistant to heat, but after 20 hours remained fairly constant. Similar observations regarding effect of age on resistance have been made by others.<sup>22, 23</sup>

The presence of *Salmonella* types found in hens' eggs and in hens' egg products is of considerable concern to

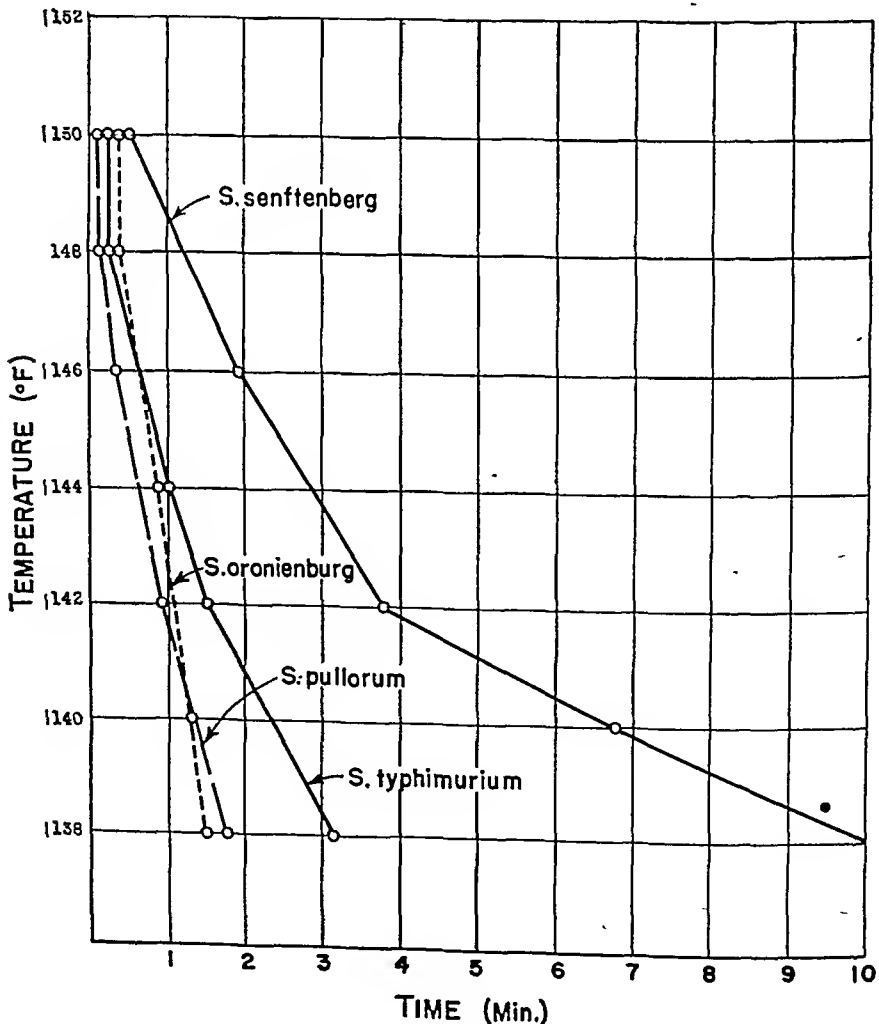


Chart 1. Posteurization Temperatures and Times for Total Destruction of Some *Salmonella* in Liquid Whole Egg.

producers, to consumers, and to public health officials. A discussion of the significance is beyond the scope of this paper. However, it should be noted that several investigators<sup>6, 9, 24-27</sup> have intimated that the types of *Salmonella* found in egg products may be responsible for cases of *Salmonella* food poisoning. Edwards<sup>28</sup> has called attention to the antigenic relationships of the *Salmonella* types found in fowls, in domestic animals, and in man. Bornstein<sup>29</sup> and others have also pointed out the lack of host specificity of many of the *Salmonella* types. Findings presented in this paper show that pasteurization is a practical and efficient method for destroying *Salmonella* organisms in liquid whole egg, thus reducing the potential public health problem.

#### SUMMARY

Temperatures and times necessary to destroy *Salmonella* organisms suspended in liquid egg and heat treated in a laboratory model pasteurizer were investigated. Each inoculum was prepared by compositing portions of 1 to 4 day old cultures of six to thirteen strains of a given *Salmonella* type. One hundred and sixty-four strains representing 16 *Salmonella* types commonly found in egg powder were used in the pasteurization tests.

*Salmonella* organisms were not difficult to destroy in the pasteurization unit. *S. senftenberg* and *S. cerro* were the most resistant types, and *S. pullorum* the least resistant. Strains of *S. senftenberg* which did not darken Kligler's iron agar were more resistant than those which produced a darkening of the medium.

With the two exceptions noted, the *Salmonella* types (*S. pullorum*, *S. oranienburg*, *S. montevideo*, *S. tennessee*, *S. anatum*, *S. barcelly*, *S. typhimurium*, *S. melcagridis*, *S. london*, *S. newington*, *S. derby*, *S. rubislaw*, *S.*

*oregon* and *S. kentucky*) were destroyed in liquid whole egg at 150° F. within 0.3 minutes, at 148° F. within 0.8 minutes, at 146° F. within 0.8 minutes, at 144° F. within 1.2 minutes, at 142° F. within 2.0 minutes, at 140° F. within 2.6 minutes, and at 138° F. within 3.7 minutes.

#### REFERENCES

1. Rettger, L. F., Hull, T. G., and Sturges, W. S. Feeding Experiments with *Bacterium pullorum*. The Toxicity of Infected Eggs. *J. Exper. Med.*, 23:475 (Apr.), 1916.
2. Tittsler, R. P. The Sterilization of Eggs Infected with *Salmonella pullorum*. *Poultry Sci.* 9:107 (Dec.-Jan.), 1930.
3. Scott, W. M. Food Poisoning Due to Eggs. *Brit. M. J.*, 2:56 (July), 1930.
4. Lerche, M. *Salmonellainfektionen Beim Geflügel und Ihre Bedeutung Für Die Epidemiologie Den Salmonellabakterien*. *Proc. Seventh World's Poultry Congress*, 1939, p. 274.
5. Van Oijen, C. F. *Salmonella Infektie in Endeneieren*. *Tijdschr. v. Diergeneesk.* 67:280, 1940.
6. Hinsbaw, W. R., McNeil, E., and Taylor, T. J. Avian Salmonellosis: Types of *Salmonella* Isolated and Their Relation to Public Health. *Am. J. Hyg.*, 40:264 (Nov.), 1944.
7. Bornstein, S., Saphra, I., and Strauss, L. Frequency of Occurrence of *Salmonella* Species. *J. Infect. Dis.*, 69:59 (July-Aug.), 1941.
8. Gibbons, N. E., and Moore, R. L. Dried Egg Powder. XI. Occurrence and Distribution of *Salmonella* Organisms in Canadian Powder. *Canad. J. Research F.*, 22:48 (May), 1944.
9. Seligmann, E., Saphra, I., and Wassermann, M. *Salmonella* Infections in Man. An Analysis of 1,000 Cases Bacteriologically Identified by the New York *Salmonella* Center. *Am. J. Hyg.*, 38:227 (Nov.), 1943.
10. Haines, R. B., and Elliott, E. M. L. Some Bacteriological Aspects of Dehydrated Foods. *J. Hyg. (Cambridge)*, 43:370 (Sept.), 1944.
11. Greco, P. A. The Pasteurization of Liquid Whole Egg. Iowa State College. *J. Sci.*, 19:18 (Oct.), 1944.
12. Winter, A. R., Greco, P. A., and Stewart, G. F. Pasteurization of Liquid Egg Products. I. Bacteria Reduction in Liquid Whole Egg and Improvement in Keeping Quality. *Food Research*. (In press.)
13. Payawal, Soledad R., Lowe, Bell, and Stewart, G. F. Pasteurization of Liquid Egg Products. II. Effect of Heat Treatment on Appearance and Viscosity. *Food Research*. (In press.)
14. McFarlane, V. H., Watson, A. J., and Goresline, H. E. Microbiological Control in the Production of Spray-Dried Whole Egg Powder. *U. S. Egg & Poultry Mag.*, 51:250 (June) 51:364 (Aug.), 1945.
15. Wedeman, W. Versuche Zum Nachweis der Pasteurisierung von Eimasse mit Hilfe der Amylase-reaktion nach Van Oijen. *Ztschr. Fleisch-u. Milchwiss.*, 50:277, 1940.
16. Cathcart, W. H., Merz, A., and Ryberg, R. E. Staphylococci and *Salmonella* Control in Foods. IV. Effect of Cooking Bakery Custards. *Food Research*, 7:100 (Mar.-Apr.), 1942.
17. Gibbons, N. E., and Moore, R. L. Dried

Whole Egg Powder. XII. The Effect of Drying, Storage and Cooking on the Salmonella Content. *Canad. J. Research F.*, 22:58 (May), 1944.

18. *Standard Methods for the Examination of Dairy Products*. Eighth Edition. 1941. American Public Health Association.

19. Tanner, F. W., and Dubois, G. E. Some Notes on the Effect of Heat on the Numbers of the Colon-typhoid Groups in Milk. *J. Dairy Sci.*, 8:47 (Jan.), 1925.

20. Watkins, J. H., and Winslow, C.-E. A. Factors Determining the Rate of Mortality of Bacteria Exposed to Alkalinity and Heat. *J. Bact.*, 24:243 (Sept.), 1932.

21. Robertson, A. H. Influence of Age of Cultures on the Heat Resistance of Non-spore-forming Bacteria. *J. Bact.*, 15:27 (Jan.), 1928.

22. Sherman, J. M., and Albus, W. R. Physiological Youth in Bacteria. *J. Bact.*, 8:127 (Mar.), 1923.

23. Stark, C. N., and Stark, Pauline. The Rela-

tive Thermal Death Rates of Young and Mature Bacterial Cells. *J. Bact.*, 18:333 (Nov.), 1929.

24. Darby, C. W., and Stafseth, H. J. Salmonella Infection Common to Man, Animals and Birds. *Rep. 46th An. Meeting U. S. Livestock Sanitary Assoc.*, 1942, p. 189.

25. Schofield, F. W. Salmonella Infections of the Domestic Animals. Their Relationship to Salmonellosis in Man. *Canad. Compar. Med. & Vet. Sci.*, 9:62 (Mar.), 1945.

26. Watt, James. An Outbreak of Salmonella Infection in Man from Infected Chicken Eggs. *Pub. Health Rep.*, 60:835 (July 20), 1945.

27. Simeone, D. H. Investigacion de Bacterias del Genero Salmonella en los Huevos de Aves. Buenos Aires Univ. *Inst. Inferm Infecciosas*, 2:35, 1944. (Exp. Sta. Rec., 82, 835, 1945.)

28. Edwards, P. R. Incidence of Salmonella Types in Fowls in the United States. *Proc. Seventh World's Poultry Congress*, 1939, p. 271.

29. Bornstein, S. The State of the Salmonella Problem. *J. Immunol.*, 46:439 (June), 1943.

## UNRRA Educational Program in China

Jerome Sidney Peterson, M.D., M.P.H., Assistant Professor in the Department of Preventive Medicine and Community Health, Long Island College of Medicine, and District Health Officer of the Red Hook-Gowanus Health Center, New York City Department of Health, has been granted a leave of absence of one year with the United Nations Relief and Rehabilitation Administration in China. Dr. Michael Antell, formerly District Health Officer of the Washington Heights Health Center, has been appointed to serve in Dr. Peterson's place during the forthcoming year.

While with the UNRRA-China Mission, Dr. Peterson will serve with the commissioned rank of Surgeon (R) in the U. S. Public Health Service. His assignment will include the teaching of

modern public health methods at the training center established at Chungking for physicians and other public health personnel from all parts of China. Dr. Peterson will also travel throughout China as Visiting Lecturer, to teach in the various regional centers which are now being developed. This educational program will emphasize the control of tuberculosis and other communicable diseases.

Dr. Peterson, who graduated from the College of Physicians and Surgeons, Columbia University, and received the M.P.H. degree from the Harvard School of Public Health, joined the Long Island College of Medicine Faculty in 1944.

Dr. Antell is an alumnus of the Long Island College of Medicine and also obtained the M.P.H. degree from the Harvard School of Public Health.

# Need for a Public Health Program in Rheumatic Fever and Rheumatic Heart Disease\*

DAVID D. RUTSTEIN, M.D.

*City Department of Health, New York, N. Y.*

THE prime objective of all public health programs is the prevention of disease, disability, and death. In surveying the field of unmet public health needs from the point of view of this objective, it is immediately obvious that rheumatic fever and rheumatic heart disease have never received the attention which they deserve from public health workers. In planning post-war public health programs it is imperative that adequate attention be paid to this disease entity.

The entity rheumatic fever and rheumatic heart disease has been selected as the subject of this presentation because it is the commonest cause of mortality and disability in children and young adults.<sup>1</sup> It is a chronic disease punctuated by acute episodes of fever and inflammation of various organs of the body, particularly the heart, joints, blood vessels, skin, and brain. The seriousness of the disease resides in the fact that death occurs during acute episodes, and because the majority of patients who recover from acute attacks have permanent heart damage—so-called rheumatic heart disease.

The disease usually has its onset in early childhood. The largest number of patients have their initial attack at about the age of 8, although initial at-

tacks not infrequently occur in adults. Attacks recur at frequent intervals until puberty is reached, at which time the attacks become less frequent. In this country the greatest seasonal prevalence is found in late winter and early spring. Rheumatic heart disease is the scar of acute rheumatic fever. The scar develops primarily on one of the heart valves, the mitral valve, and causes gradual obstruction to the flow of blood from the left auricle through that valve to the left ventricle. In addition the diffuse scarring of the heart muscle weakens that portion of the organ.

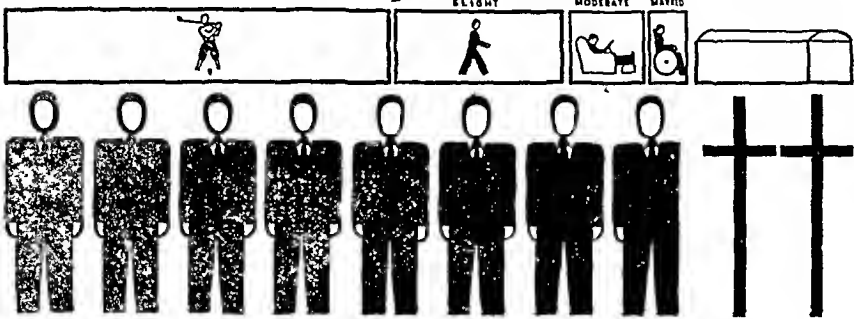
The prognosis of a patient who has had an attack of acute rheumatic fever may be learned from a study of the data compiled by Dr. T. Duckett Jones at the House of the Good Samaritan in Boston.<sup>2</sup> At that institution 1,000 children were followed for a period of ten years each, following the initial diagnosis of the disease (Figure 1). It was found that at the end of that period of time 203 were dead and 783 were living, 14 of the patients having been lost from observation. Of those who survived, 344 were forced by the residual heart disease to limit their activities; 135 of these were so incapacitated that they were forced to lead a sedentary existence; and 209 were restricted in that they could not participate in competitive sports. Only 439 were able to lead a completely normal existence. From our knowledge of the

\* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 14, 1945.

FIGURE 1

# 1000 RHEUMATIC FEVER & HEART DISEASE PATIENTS 10 YEARS AFTER DIAGNOSIS OF ILLNESS...

NORMAL ACTIVITY—439      IMPAIRED ACTIVITY—344      DEAD—203



DATA AFTER T. DUCKETT JONES

NOTE: STATUS OF 14 PATIENTS UNKNOWN

nature of the disease it is reasonable to expect that further mortality and disability will occur after the first 10 year period.

Another indication of the severity of the disease is the diminished life expectancy of sufferers from this disease. In figures compiled by Hedley for the year 1936 in Philadelphia<sup>3</sup> the average age at death of individuals with rheumatic fever or rheumatic heart disease was 36.5 years, in comparison to an

average age at death of 55 years<sup>4</sup> for the general population of the same city in the same year (Figure 2).

The magnitude of the problem is great. The disease is a common one. Where surveys have been conducted, from 0.3 to 6 per cent of the childhood population, and from 0.6 to 1 per cent of the young adult population have been found to be afflicted with rheumatic heart disease.<sup>5</sup> This is similar to the prevalence of tuberculosis. The

FIGURE 2

# RHEUMATIC FEVER AND HEART DISEASE PATIENTS DIE EARLIER

(PHILADELPHIA, 1936)

Average Age at Death  
GENERAL POPULATION



Average Age at Death  
RHEUMATIC FEVER AND HEART DISEASE PATIENTS

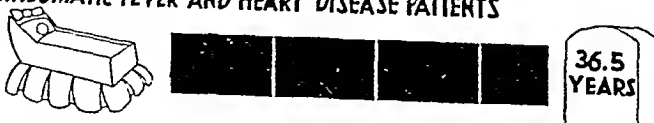
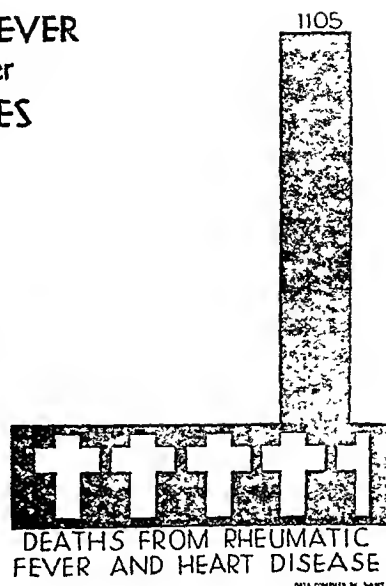
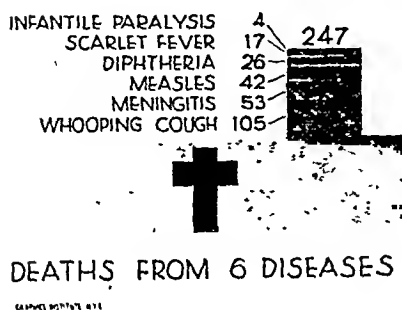


FIGURE 3

# How Deaths from RHEUMATIC FEVER Compare with Deaths from 6 Other COMMON INFECTIOUS DISEASES

(NEW YORK CITY, 1938)



entity rheumatic fever and rheumatic heart disease is the commonest cause of death between the ages of 5 and 19 and the second commonest cause of death in the age group of 19-24.<sup>1</sup> Swift<sup>6</sup> has shown that the reported deaths from rheumatic fever and rheumatic heart disease in New York City in 1938 were 1,105 as compared with a combined total of 247 for pertussis, cerebrospinal meningitis, measles, diphtheria, scarlet fever, and infantile paralysis (Figure 3). In other words, in 1938 there were approximately five times as many deaths in this one disease as from a combination of six common reportable diseases in New York City in the same year.

Rheumatic fever has been a particularly prevalent disease in the military population during World War II. Figures released by the Office of the Surgeon General of the U. S. Army indicate that approximately 17,000 cases of rheumatic fever occurred in that branch of the service from January, 1941, until August 1, 1945.<sup>7</sup> The Bureau of Medicine and Surgery of the United States Navy has indicated that from the onset of the war up to January 1, 1945, 14,344 cases of rheumatic

fever occurred in that branch of the service.<sup>8</sup> During the same period the Office of the Air Surgeon has estimated that thousands of cases occurred in the air forces,<sup>9</sup> although an exact figure has not been released. The majority of the attacks of rheumatic fever among members of the Armed Forces occurred in individuals who had no history of previous attacks of rheumatic fever. When one recognizes that rheumatic fever and rheumatic heart disease are chronic diseases, the expense to our government for the care of veterans who have acquired this disease while members of the Armed Forces may well be imagined.

During the past few years information has accumulated which has increased our knowledge of rheumatic fever. We have learned much concerning factors<sup>5</sup> which may be nonspecific, such as poverty, crowding, climate, dampness, and the detonating effect of an infection with the group A beta hemolytic streptococcus. At the present time this knowledge is not adequate to assure prevention of the disease or its specific treatment. Further research is badly needed.

In spite of our relative lack of knowl-

edge, much can be done to lessen the burden of this disease on the individual and on the community. Surveys of communities have revealed that a large number of agencies are already concerned with the rheumatic fever problem.<sup>10</sup> Such groups as practising physicians, hospitals and convalescent and foster homes, visiting nurse associations, organizations of medical social workers, school health agencies, housing authorities, private charitable organizations, local heart associations, occupational therapy services and governmental departments of welfare, education, and health are now concerned with the problem. In most communities these agencies are working earnestly, but in a completely haphazard fashion, with lack of coördination; and none of them individually is equipped to handle the entire problem. Since rheumatic disease is chronic, there is a tendency for patients to shop around and there is therefore endless duplication and waste in the use of community assets for the care of such individuals.

In addition to the administrative reasons already presented, there are a large number of clinical and epidemiological facts which indicate the need for the organization of a community rheumatic fever program. These include: difficulties in the diagnosis of rheumatic disease, the wide prevalence of the disease, the chronic nature of rheumatic disease with its impact on family life, the low economic level in which the disease is most prevalent, and the complexity of care necessary for the management of patients.

These individual factors deserve more detailed discussion. The difficulty of diagnosis of rheumatic fever is well known. Precise diagnosis is made difficult because the etiology of the disease is unknown, there is no specific diagnostic laboratory test, and the diagnosis in most cases is frequently dependent on a physician's impression of a group

of nonspecific symptoms and signs. Many diseases have been confused with it. Among these are tuberculosis, anterior poliomyelitis, functional heart disease, influenza or grippe, undulant fever, inflammatory joint diseases, including rheumatoid arthritis, and other febrile diseases. This has resulted in wide variations in the diagnosis of rheumatic fever by general practitioners.<sup>11</sup> These points emphasize the great possibility of error in falsely diagnosing the disease in normal people, and the failure to diagnose the disease in the rheumatic patient. It is a serious matter not to diagnose rheumatic disease when it exists, but it is an even greater tragedy to apply the rheumatic label to a perfectly normal child. One of the greatest benefits which may be expected from a community rheumatic fever program is the removal of the label of rheumatic fever from patients inaccurately diagnosed.

Precise diagnosis in early cases requires many laboratory aids and much clinical experience with the disease. Even when all of these facilities are available, the diagnosis may still be difficult, particularly in early cases. In the Cardiac Classification Service of the New York City Department of Health, where school children are referred by a school physician for consultation and examination by a qualified cardiologist, one-third of the individuals admitted to the clinic leave with a diagnosis of either possible heart disease, potential heart disease, or possible and potential heart disease.<sup>12</sup> In other words, it is not possible for a qualified cardiologist to determine on one visit in one-third of the cases whether or not rheumatic disease is present. In such instances it is necessary for the patient to return and to be followed carefully at future examinations in order to determine whether or not the disease actually exists. In most cases this can usually be determined after a relatively short

period of follow-up. The experience of the Cardiac Classification Service is typical of that found in cardiac clinics throughout the country.

The familial prevalence of the disease plus its chronic nature places a very great burden on the family. Patients are prone to have recurrent attacks of rheumatic fever and require special care between attacks. Furthermore, the development of rheumatic heart disease imposes crippling and limitation of activity in a sizeable percentage of the cases. The fact that more than one individual in the same family may become afflicted with the disease contributes to the low economic level in which the disease is most prevalent. This low economic level implies poor, crowded, and damp housing, poor nutrition, and the frequent occurrence of other diseases, particularly respiratory diseases, in the same family. Where these factors exist, rheumatic patients cannot be properly handled at home, and may need foster and convalescent home services.

With all of these facts in mind I should now like to outline the organization of a program. First, there is need for a central integrating agency where all community facilities for the care and diagnosis of patients may be pooled. The registry of known rheumatic patients should be maintained at this agency. Of all community agencies, the health department is best suited for the performance of this function, and it may operate in exactly the same fashion as it does in the case of other crippled children's programs. The registry of known patients and a file of community facilities are the tools with which the program is integrated.

The arguments in favor of a registry as against a reporting system in the case of rheumatic disease have been outlined elsewhere<sup>13</sup> and will not be repeated in detail here. Briefly, it is felt that the requirement for reporting

of rheumatic fever by the practising physician is not a desirable one. Accurate information concerning the prevalence of rheumatic disease and a useful current file of rheumatic fever patients can be obtained in a much more satisfactory manner through the use of a registry such as that of the London County Council Rheumatism Scheme.<sup>14</sup> Such a registry, complemented by a current file of available community facilities for the care of rheumatic fever patients, will provide a very satisfactory basis for program organization.

The next important need is medical service. Such service includes diagnostic, treatment, and follow-up facilities in the offices of private physicians, in clinics, hospitals, sanatoria, and convalescent homes. The use of the services of a cardiologist or of an approved cardiac clinic for the purpose of accurate diagnosis of this disease does not mean that the patient will leave the care of the private physician. On the contrary, the private physician should act as the initial screening agency, suspecting rheumatic fever whenever it may possibly exist. The consultant cardiologist or the approved cardiac clinic should then be available to him to provide him with accurate diagnosis of his case and with recommendations for proper follow-up of this chronic disease. Professional education of physicians should be directed toward lowering their threshold of suspicion of the existence of the disease and in verification or denial of the suspicion through the use of properly qualified consultants and clinics. The consultant and the clinic should also provide guidance to the physician in the complicated problem of prophylaxis against recurrences of the disease through the use of the sulfonamide drugs.

There should be available adequate facilities for case finding, particularly among siblings of known patients with



rheumatic disease. Such case finding services may be operated in collaboration with approved clinics. The organization of case finding services for rheumatic disease is similar to that of tuberculosis.

Nursing service will be necessary in clinics, hospitals, convalescent and foster homes, and in the home of the patient. Careful coördination of the activities of institutional and visiting nurses is essential.

Medical social service is important, since most patients suffering from rheumatic disease are in the lower income group. Such services should be designed to make community facilities fit the needs of the individual patient.

Provision should be made in the school health service for case finding, special classes, vocational guidance, and bedside teaching for institutionalized and bedridden patients. Where the cardiac damage is likely to cause permanent physical incapacitation, vocational therapy services are essential to aid the patient in becoming a useful citizen rather than a community liability.

Occupational therapy services will be necessary to maintain the morale of chronically bedridden patients.

It is necessary to plan and conduct a program of professional education for physicians, nurses, medical social workers, school teachers, and representatives of all agencies concerned in the rheumatic fever program. It is impossible to obtain complete coöperation on the part of the agencies concerned unless the agency representatives are familiar with the objectives and the plans of the program. Education of all these groups must, therefore, precede the organization of the program.

Lay education will be necessary to provide proper financial support for the program. Such education at first should be directed toward the general features of the disease and the magni-

tude of the problem. Education in the symptoms of the disease must await the development of proper diagnostic facilities. A great deal of anxiety in the minds of patients and relatives will be created if such education precedes the existence of such facilities. On the other hand, after adequate diagnostic facilities are established, lay education in the symptoms of the disease is important to assure a demand for medical care early in the disease.

There is a great need for additional information about rheumatic fever and rheumatic heart disease. Whenever possible the program should provide for research in the clinical and epidemiological features of rheumatic fever.

Finally, provision should be made for guidance and evaluation of the effectiveness of the program. Rheumatic fever programs are experimental, and the individual features of such programs should be carefully studied in order to determine whether or not they are necessary or need modification.

There are many details lacking in this outline of a community program. Some have been omitted because of the need for brevity. Many remain to be worked out. Coördination of rheumatic disease programs on a national level will facilitate this process and give impetus to the development of local rheumatic fever programs throughout the country. Since the coördination of a rheumatic disease program on a national level is so important, this presentation would not be complete without some reference to the American Council on Rheumatic Fever.

The need for coördination on a national level was recognized approximately two years ago when the American Heart Association called a conference of national organizations concerned with the problem of rheumatic disease. The American Public Health Association was one of the organizations represented at that conference. The members of the conference unanimously

adopted the following recommendations:

This conference is strongly in favor of the extension of public programs supported by federal, state, and local funds for the study, prevention, and treatment of this disease. Moreover, we believe it essential that additional funds be secured from private sources for the purpose of special studies to increase basic knowledge of the disease, for professional education, and for increasing public awareness of the problem.

In order to accomplish the purposes mentioned above, this conference recommends that a Council on Rheumatic Fever be formed under the leadership of the American Heart Association and that this Council shall include representatives of interested organizations.

Following the initial meeting, the American Council on Rheumatic Fever of the American Heart Association was formed, and included representatives of the following organizations: American Academy of Pediatrics, American Association of Medical Social Workers, American College of Physicians, American Heart Association, American Hospital Association, American Medical Association, American Nurses Association, American Public Health Association, American Rheumatism Association, and the National Society for Crippled Children.

The Council has been slow in getting under way because of difficulty in obtaining adequate financial support. This is due to the great lack of public awareness of the importance of the rheumatic disease problem. The initial program contemplated by the Council when funds are available is as follows:

1. Preparation of detailed plans for community rheumatic fever programs
2. Preparation and distribution of criteria for the diagnosis of rheumatic fever and rheumatic heart disease and of recommendations relating to treatment and convalescent care
3. Preparation of recommendations relating to undergraduate and graduate education of physicians and nurses
4. Plans for the initiation or sponsorship of research by individuals or groups

5. The preparation and adoption of a uniform method of evaluation of existing programs in rheumatic fever

The coöperation of the American Council on Rheumatic Fever with local voluntary and governmental public health organizations will do much to increase and codify our knowledge of the basic principles of community organization in the rheumatic fever program.

In summary, it is evident that the entity rheumatic fever and rheumatic heart disease poses a significant public health problem, and it is important that public health agencies meet this problem on the basis of established clinical and epidemiological facts in accordance with sound administrative principles.

#### REFERENCES

1. Armstrong, D. B. and Wheatley, G. M. *Studies in Rheumatic Fever*. Metropolitan Life Insurance Co., New York, Nov., 1944.
2. Jones, T. D. and Bland, E. F. Rheumatic Fever and Heart Disease; completed 10-year observations on 1,000 patients. *Tr. A. Am. Physicians*, 57:265-270, 1942.
3. Hedley, O. F. Mortality from Rheumatic Heart Disease in Philadelphia During 1936. *Pub. Health Rep.*, 52; part 2, 1907-1923, 1937.
4. Marks, H. H. Personal communication.
5. Paul, J. R. *Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects*, 2nd ed. New York, Metropolitan Life Insurance Co., 1943.
6. Swift, H. F. Features Which Suggest Public Health Consideration of Rheumatic Fever. *Bull. New York Acad. Med.*, 16:501-513, 1940.
7. Office of the Surgeon General, U. S. Army. Personal communication.
8. Bureau of Medicine and Surgery. U. S. Navy. Personal communication.
9. Office of the Air Surgeon, U. S. Army. Personal communication.
10. Parker, M. E. Unpublished observations.
11. Rutstein, D. D. The Role of the Cardiac Clinic in the Rheumatic Program. *J.A.M.A.*, 126: 484-486 (Oct. 21), 1944.
12. Cardiac Classification Service, New York City Department of Health. Unpublished observations.
13. Rutstein, D. D. Chapter 12, "Lines Along Which Public Health Procedures May Develop." Paul, J. R. *Epidemiology of Rheumatic Fever and Some of Its Public Health Aspects*, 2nd ed. New York, Metropolitan Life Insurance Co., 1943.
14. Thornton, C. E. London Scheme for the Treatment and Supervision of Juvenile Rheumatism. *Acta rheumatol.*, 9:10, 1937. *Annual Report of the Council for the Year 1937*. London County Council, 1938, vol. 3, part 2. Bach, F., Hill, N. G., Preston, T. W., and Thornton, C. E. Juvenile Rheumatism in London. *Ann. Rheumat. Dis.*, 1:210, 1939. Schlesinger, B. Public Health Aspects of Heart Disease in Childhood. *Lancet*, 1:593 and 649, 1938.

# Improvement of the Nasopharyngeal Swab Method of Diagnosis in Pertussis by the Use of Penicillin\*

WILLIAM L. BRADFORD, M.D., ELIZABETH DAY, AND  
GEORGE P. BERRY, M.D., F.A.P.H.A.

*Departments of Pediatrics and Bacteriology, The University of Rochester,  
School of Medicine and Dentistry, Rochester, N. Y.*

IN 1929 Fleming<sup>1</sup> demonstrated the value of penicillin in the isolation of *Hemophilus influenzae*. When penicillin was incorporated in the culture medium or when an amount of from 2 to 6 drops of it was spread over one-half a Petri plate after the infected material, such as sputum or nasal mucus, had been streaked over the surface of the medium, the growth of the penicillin-sensitive organisms was so completely inhibited that *Hemophilus influenzae* often grew in practically pure culture. Fleming stated, "In addition to its possible use in the treatment of bacterial infections penicillin is certainly useful to the bacteriologist for its power of inhibiting unwanted microbes in bacterial cultures so that penicillin-insensitive bacteria can readily be isolated."

MacLean (1937)<sup>2</sup> used Fleming's technique for the isolation of *Hemophilus pertussis*. He applied from 6 to 8 drops of the strong penicillin solution to one-half of the Bordet's medium in a cough plate. Of 50 such plates exposed, 47 gave positive cultures for *Hemophilus pertussis* on the penicillin-treated side of the plate as against 33 positives obtained on the untreated side. When

pharyngeal swab cultures, taken after a paroxysm, were treated with penicillin, from 75 to 80 per cent yielded positive results.

Cruickshank (1944).<sup>3</sup> applied 4 drops (15 to 25 Oxford units) of penicillin solution to the surface of Bordet's medium (12 ml. of medium per plate). Later, this amount was increased to 8 drops. The solution was distributed over the surface of the plate with a sterile glass spreader. After the plate was incubated for from  $\frac{1}{2}$  to 1 hour, it was inoculated with material obtained by swabbing the posterior pharynx with a bent swab passed through the mouth. Cruickshank found that such swab cultures were equally as effective as ordinary cough plate cultures without preliminary treatment with penicillin. He indicated that more care in the taking of the post-nasal cultures would probably have given better results.

The nasopharyngeal swab method for bacteriological diagnosis of pertussis, introduced in 1940, has proved to be superior to the ordinary cough plate method in our hands.<sup>4, 5</sup> This superiority has been confirmed by others.<sup>6, 7</sup> In using this technique a small loopful of 0.85 per cent sodium chloride solution is placed upon the surface of the medium and the charged swab is passed

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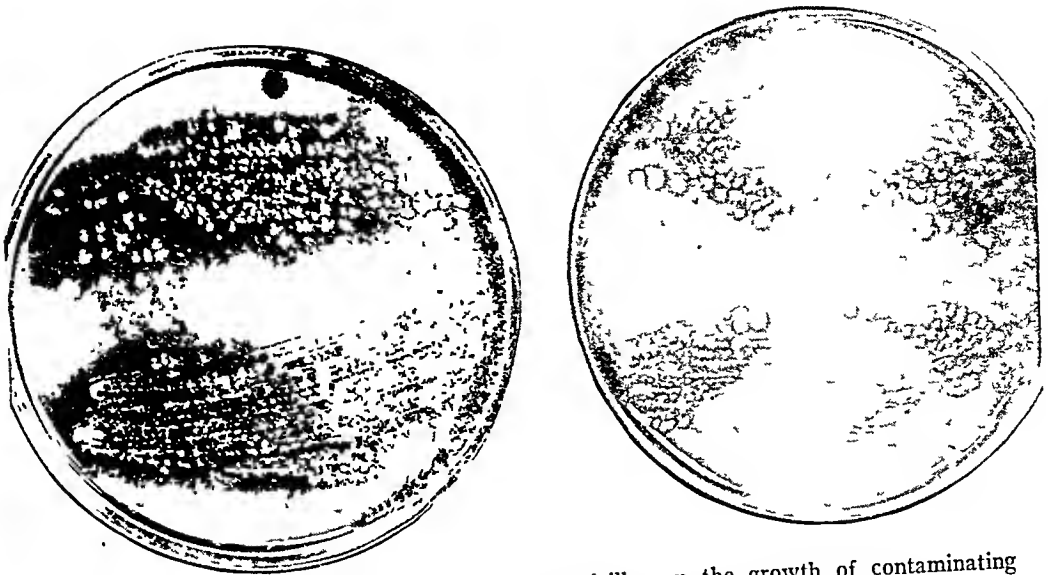


FIGURE 1—Showing the inhibiting effect of penicillin on the growth of contaminating organisms (right) to facilitate the identification of *Hemophilus pertussis* colonies on the surface of Bordet's medium. (Control plate is shown on the left)

back and forth several times through the drop of saline. The plate is then streaked with a long, flexible loop.

In the present report are described the results of a series of cultures in which a loopful of penicillin solution containing 1,000 Oxford units per ml. was substituted for a loopful of 0.85 per cent sodium chloride solution. For comparison, cultures were taken chiefly from hospitalized patients during various stages of whooping cough, and plated simultaneously by the two methods.

RESULTS

The results shown in Table 1 clearly indicate that the use of penicillin facilitates the isolation of *Hemophilus pertussis* by inhibiting the penicillin-sensitive organisms that ordinarily appear on cultures made from the posterior pharynx.

The area of inhibition of the contaminating organisms, as usually observed, is well illustrated in Figure 1. Within this area a practically pure growth of *Hemophilus pertussis* is often observed. Moreover, the medium within this zone usually retains its original

TABLE 1  
Results of 95 Simultaneous Nasopharyngeal Swab Cultures from 52 Cases of Pertussis

Age Years	Number Patients	Number of Positive Cultures	Number of Negative Cultures
Penicillin			
Under 2	20	47	2
2-14	28	38	1
Over 15	4	7	0
Total	52	92 (97.6%)	3
0.85% NaCl			
Under 2	20	42	7
2-14	28	26	13
Over 15	4	7	0
Total	52	75 (76.8%)	20

Difference in Percentage of Positive cultures 20.8  
Standard error of the difference 4.6  
Ratio of difference in Percentages to its S.E. 4.5 to 1

cherry-red appearance. After 3 days of incubation, the remainder of the medium is frequently discolored by the acid producing growth of contaminating organisms.

When too strong a concentration of penicillin is used, the growth of *Hemophilus pertussis* is inhibited. In spite of the fact that the organism is generally considered to be penicillin-

insensitive, our observations indicate that it is sensitive to strong concentrations. This effect occurs *in vivo* as well as *in vitro*, for we have observed in certain experiments a significant clearing of the organism from the lungs of experimentally infected mice treated with penicillin.

Two interesting, and probably significant, findings appear in our data. First, the penicillin treated cultures gave better results than the saline treated cultures in the age groups above infancy (Table 1). (The superiority of the nasal swab method was originally observed to exist in cultures taken from infants.) Second, such cultures are more efficient after the catarrhal period of the disease (Table 2); for example, 13 of the 20 negative control cultures were obtained in the later stages of the disease when the number of organisms is usually less.

TABLE 2

*Distribution of Negative Cultures According to the Stage of the Disease*

Stage of Disease	Number of Negative Cultures	
	Penicillin	0.85% NaCl
Catarrhal (1st and 2nd week)	2	7
Paroxysmal (3rd and 4th week)	1	7
Decline (5th and 6th week)	0	6

## SUMMARY

By means of a technique in which a charged post-nasal pharyngeal swab was moistened with a loopful of penicillin (1,000 Oxford units per ml.) and placed upon the surface of Bordet's medium, a high percentage (97.6 per cent) of positive cultures of *Hemophilus pertussis* was obtained from patients in various stages of whooping cough. Cultures taken in the same way except for the substitution of 0.85 per cent sodium chloride solution for the penicillin, yielded a significantly lower percentage (76.5 per cent) of positive cultures.

## REFERENCES

1. Fleming, A. On the Antibacterial Action of Cultures of *Penicillium*, with Special Reference to Their Use in the Isolation of *B. Influenzae*. *Brit. J. Exper. Path.*, 10:226, 1929.
2. MacLean, I. H. A Modification of the Cough Plate Method of Diagnosis in Whooping Cough. *J. Path. & Bact.*, 45:472, 1937.
3. Cruickshank, R. Post-nasal Swab in Diagnosis of Pertussis. *Lancet*, 1:176, 1944.
4. Bradford, W. L., and Slavin, B. Nasopharyngeal Cultures in Pertussis. *Proc. Soc. Exper. Biol. & Med.*, 43:590, 1940.
5. Brooks, A. M., Bradford, W. L., and Berry, G. P. The Method of Nasopharyngeal Culture in the Diagnosis of Whooping Cough. *J.A.M.A.*, 120: 883, 1942.
6. Miller, J. J., Jr., Leach, C. W., Saito, T. M., and Humber, J. B. Comparison of the Nasopharyngeal Swab and the Cough Plate in the Diagnosis of Whooping Cough and *Hemophilus Pertussis* Carriers. *A.J.P.H.*, 33:839, 1943.
7. Bullowa, J. G. M., Buxbaum, L., and Scheinblum, I. E. Pertussis: Bacteriologic and Agglutination Studies. *J. Pediat.*, 25:299, 1944.

# Post-war Training Problems in Public Health\*

GEORGE T. PALMER, DR.P.H., F.A.P.H.A.

*Senior Sanitarian (R), U. S. Public Health Service, Washington, D. C.*

A LETTER recently received by the Public Health Service reads in part as follows:

"Please send me a list of full- and part-time public health positions available to physicians about to be discharged from the armed forces. I am a pediatrician and want to get into public health work."

Another letter reads as follows (this is from Iwo Jima):

"I have served in the hospital corps of the Navy over three years, during which I received a course of instruction in malariology at the Navy Medical School. I have been overseas working with a malaria and epidemic control unit for 15 months. I have had two years of university training. Any information that you can send me that will help me plan a career in public health will be greatly appreciated."

These two letters, selected from many, indicate one of several reasons why Surgeon General Parran believed it necessary to appoint a Committee on Post-war Training of Public Health Personnel.

The first letter is from a physician. He wants to get back into the public health field. But where? What are the openings? The second letter is from a pharmacist's mate, first class, who has had some college training. For several years he has been engrossed in a very practical and useful job, malaria control. Where does he fit into the

civilian public health picture? Is there some way we can salvage this valuable experience? Should he seek a health department connection in a community that has a malaria problem? Or should he go back to college and get his degree? There is no malaria problem in his home state. His talents are most needed in the South. But to get a job in some areas of the South or in some areas in the North or West for that matter, he must be a resident of the state. What then? If he decides to go back to school, he can get some financial aid through the G-I Bill of Rights, tuition up to \$500 a year and subsistence allowance up to \$90 a month. But with a wife and two children, he must think twice.

The pharmacist's mate needs more schooling if he wants to advance in the public health field. He has had some practical training.

The pediatrician needs professional training in a school of public health if he expects to go into public health work as a career. The pediatrician is the more fortunate one. He has not only his G-I Bill of Rights financial aid, but he also is in line for federal grant-in-aid funds which the states can spend for professional training, and which can be used to supplement the G-I Bill of Rights allowance up to a top of \$250 a month. But he must first be appointed to a state or local health department to be eligible for grant-in-aid funds. There may or may not be a vacancy in his home state. And even if there were a

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vacancy, his home state may not have asked for funds for training a physician in a school of public health. What then? Cannot the Public Health Service provide grant-in-aid funds for a fellowship? No, the grant-in-aid funds are for allotment to the states. If the state does not ask for funds for training, then there is no way for the Public Health Service to use these funds for training.

Inquiries of this nature are important, and there have been hundreds of them coming in to the Public Health Service and the American Public Health Association, which is coöperating with the Service in this program. The solution of the problems raised by these letters is even more important. They are important because the state and local departments of health in this country are desperately in need of trained personnel.

The Public Health Service made a survey of these departments in the summer of 1945. This discloses that of 29,000 established positions, 6,500 vacancies existed. Forty-five per cent of these vacancies are being held for former employees who went into the armed services. The remaining vacancies, numbering 3,600, call for new personnel. Among these new persons needed in state and local health departments are 2,000 public health nurses, 425 health officers and medical administrators in special fields, 140 public health engineers, 400 laboratory workers, and 400 sanitary personnel other than engineers.

But even more new people are needed than shown above. Public health workers in health departments are retiring each year as they reach the age limit, and even younger people are leaving the field from time to time for one reason or another. Thus we need annual replacements. The exact number is unknown, but at the minimum it would be at least 1,700. Nor have we

included above the new persons who will be needed as public health work expands, nor the new individuals and replacements needed in voluntary health agencies and in school health work carried on by boards of education. Thus instead of 3,600 new persons who are known to be needed in state and local health departments as disclosed by the aforementioned survey, the total number of new personnel to whom public health is beckoning is nearer six or seven thousand.

Another reason why these letters from distant military camps in this country and from Iwo Jima, Okinawa, the Philippines, Hawaii, and elsewhere are important is that this present period of demobilization offers an unprecedented opportunity to recruit staff for public health. Many men and women, particularly those who entered the military service directly from college or medical internship or dental, nursing, and engineering schools, are poised on the brink of a decision as to their future career. The present is a dividing line between a war era and an era of welcomed peace. What to do? Now is the unique time to make known to returning veterans the needs and the attractions of a public health career.

But public health calls in the main for professionally trained persons. The untrained person who enters the field will find himself thwarted as the years roll by and as he looks forward to advancement and salary increase to solve the worries of a growing family, increased expense, and responsibilities. Professional training will facilitate the climb up the ladder.

There is already a surge to training institutions. The G-I Bill of Rights will help in the financing, and for employees of state and local health departments, the federal grants-in-aid to states will also help in professional training. But for men and women just out of the military service, who have

never been employed in state or local health departments and who want to enter this field, the grant-in-aid funds are not so widely available. Questions of residence, the number of existing vacancies in an individual state, and available funds for training in the specific state enter the picture. The applicant is sometimes blocked in finding an opportunity for training.

In order to surmount these obstacles the private foundations have been asked to lend their assistance with fellowships for the next two years so that the orderly flow of eager applicants to professional training institutions may not be obstructed and the full advantage of this unusually favorable period for recruitment may not be wasted.

If so many flock to training institutions—will there be room for all? Have we the capacity to absorb the load? The capacity of the eight schools of public health in the Association of Schools of Public Health is estimated to be less than 500 students as candidates for the degree of Master or Doctor of Public Health, and 500 more with other types of training, including short-term courses. The probable load of degree candidates may be estimated as 600 a year for the next three years, after which it may lighten somewhat. This includes about 260 physicians to be trained annually as health officers and administrators of special services.

There are 2,000 positions in public health nursing to be filled by new staff in state and local health departments alone. This number, together with replacements for nurses retiring or leaving positions in state and local health departments, as well as local boards of education and voluntary agencies, raises to 3,500 the number of positions which should be filled before another year. Schools of public health nursing will be faced with the task of training between 2,000 and 3,000 nurses annually in the years immediately ahead.

The Surgeon General's Committee is acting as a clearing house, trying to establish a through connection between demobilized veterans on the one hand and training and jobs on the other. But establishing such connection is not enough. The committee believes that the training problem itself deserves much thought. What kind of training? How much training? Should academic professional training, at least for a physician, be preceded by an orientation period of training? Here the trainee working temporarily in a state or local health department under supervision but without administrative responsibilities, can have a chance to learn the problems, to get the feel of the job, and to see whether he is going to like it. Here, also, the potential employer can size up his prospective employee to see whether he is worth an additional investment in professional public health training.

Academic professional training is essential, but it is a sheltered life. While the student health officer has been acquiring his master's degree in public health, presumably he has been given the theoretical instruction on how to swim in both the charted and uncharted waters which he may encounter. Would it not be a good idea for him to practise swimming for a while under close supervision in a going health department and have a try at buffeting the waves of practical situations and realistic health administration before being turned loose to be skipper of his own crew and master of his boat? Field training smooths the path between the vine covered buildings and the administrative vocation of health officer.

Even what goes on within the college walls has been discussed by the committee. What subject matter should be taught in a school of public health? Years ago, Charters and Hindman,<sup>1</sup> after a detailed study concluded that the duties of a public health commis-



sioner "seem preponderatingly to be administrative, executive, educational, and personal." In the training of health officers, they state further that "those duties will have preference in a curriculum which have the widest range, occur most frequently, are most difficult to learn, and are of most crucial importance when they do occur." The Surgeon General's Committee—which includes the deans of two schools of public health—has a feeling that such subjects as health education (adult and school), personnel administration, business administration and administration of medical care programs have yet to be given adequate attention in the curriculum.

The schools of public health are performing a magnificent service not only for the local students but for students who come from all states and from many foreign countries. These schools are rendering a service to the nation, for their students are being trained primarily for public positions to protect the health of the nation. They are contributing to good international relations in the training for leadership that is being given to foreign students. But they lose a thousand dollars annually on every degree student. Federal aid directly to the schools themselves to

help support their faculty and administration would be fully justified.

There is a big job ahead of us in the next few months. It calls for the closest coöperation between public and private health agencies on federal, state, and local levels. The keen interest of the schools of public health is a necessity. Financial support from the foundations to meet the emergency problems is needed. The steps already taken are beginning to bring results—not many as yet—but enough to show that we are on a promising course.

Another letter, this one from a physician mustered out after four and a half years in the Army, is an example of what I mean.

"My application has been accepted at the ..... School of Public Health. I am happy to say that I shall be starting school there in a few days. After I get my degree, I shall want to write you again for further advice."

In this instance, a through connection has been established between the demobilized veteran and his training.

#### REFERENCE

1. Charters, W. W. and Hindman, Darwin H. The Duties of Ohio Public Health Commissioners. *Bureau of Educational Research Monographs, No. 17*, Ohio State University, Columbus, Ohio, 1933, pp. 11-12.

# Results from the Current Mortality Sample

ELIZABETH H. PITNEY, PH.D.

*Vital Statistics Division, Bureau of the Census, Washington, D. C.*

AS 1945 came to an end, the United States could chalk up on the credit side of its vital statistics ledger for the year freedom from major epidemics, a continuation of general mortality at a level comparing favorably with that for the previous year, and a further reduction in the mortality from a number of the important causes of death. Despite the high wartime birth rate and the heavy load carried by hospital personnel and facilities, both the infant and maternal mortality rates gave promise of reaching new record lows in 1945. The death rate for respiratory tuberculosis which had been watched apprehensively since the beginning of the war continued its almost unbroken decline into 1945. In the winter of 1944-1945, the death rate for pneumonia approached, if it did not actually reach, an all time low for the season. Of the infectious diseases common in childhood, the death rate for measles reached a cyclical low and that for cerebrospinal meningitis, which had been in epidemic phase for the two preceding years, dropped in 1945 toward the trough of its periodic cycle. Deaths from accidents other than motor vehicle accidents, which had increased among males at the beginning of the war, declined in 1945, a part of the decrease being due to a sharp reduction in deaths from air transport accidents among men in military training.

On the other side of the ledger, the most dramatic change occurred in the

death rate for motor vehicle accidents. In relation to its wartime level, the death rate for motor vehicle accidents rose in 1945, slowly at the time of VE-day and rapidly following VJ-day and the end of gasoline rationing. By October the rate was about one and a half times as high as in the same month of 1944, and the outlook for the first year of peace was the highest motor vehicle accident death rate since 1942. There was also some indication that the decline which occurred in the death rate for suicide during the war (from 14.3 per 100,000 population in 1940 to 10.0 in 1944) came to an end in 1945.

These observations regarding some of the significant developments in mortality in the United States during 1945 are based upon the provisional figures which were obtained from a 10 per cent sample of death certificates. A final accounting of all registered deaths in the country will be available toward the end of 1946 when the records for all registered deaths have been received and tabulated in the Bureau of the Census.

The program for obtaining cause-of-death statistics for the United States on a current basis by means of sampling was set up in 1942 by the Bureau of the Census with the coöperation of state and city\* vital statistics offices. In 1943 the sampling area included 46

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\* The four independent registration cities are Baltimore, Boston, New Orleans, and New York.

states and the District of Columbia, and in 1945 it covered the entire continental United States. The purpose of this paper is to describe the program and its results.

#### HOW THE SAMPLE IS TAKEN

In the ordinary course of events, vital records flow from their points of origin in the local registration districts where the births or deaths occur into the state vital statistics offices and thence in the form of copies or transcripts to the Bureau of the Census. In most states, shipments of certificates from the local registrars arrive monthly in the state office, the local registrars being required by law to send in by the 10th of each month the certificates that were filed with them during the previous month. After the certificates have been queried and processed for state use, they are copied for the Bureau of the Census. When transcripts of all registered deaths occurring in a calendar year have been received in the Bureau, usually by the fifth month of the following year, tabulations can be made on a national basis.

The current mortality sampling program taps this stream of vital records in the state office on about the 20th of each month. The certificates drawn in the sample are copied immediately and the transcripts are sent to the Bureau of the Census where the processing of the data is given high priority so that the results may be released for use within less than 2 months from the close of the period in which the deaths occurred.

The sample is taken by selecting every tenth death certificate received between two dates a month apart.<sup>1</sup> In most states, on the sampling date, the certificates that have been received are together in a temporary file, arranged in a definite order usually by county or registration district. The sample is then drawn by taking every tenth death certificate in the file.

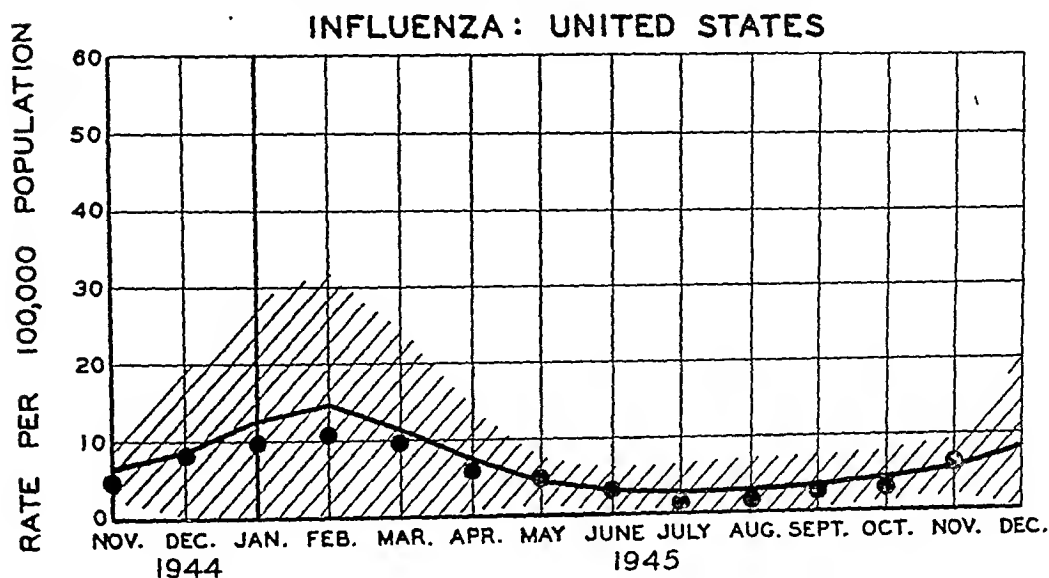
The monthly sampling date is set for the time at which it can be anticipated that practically all local registrars will have sent in their certificates for the previous month. Thus, it may be expected that the group of certificates received between two sampling dates, say the 20th of March and the 20th of April, will consist almost entirely of certificates for deaths occurring in March. Usually some certificates for deaths in earlier months will be included and some for March deaths will be missing. However, it has been found that the stragglers for earlier months tend to balance those for the current month still outstanding,<sup>2</sup> so that no serious error is involved in taking the data received between two sampling dates as an index of the events which occurred during a calendar month.

#### CURRENT MORTALITY ANALYSIS

The tabulated returns from the sample are published monthly in a four page release, *Current Mortality Analysis*. This regularly includes a graphic presentation of the results as well as a discussion of the returns for the month and several tables giving the number of deaths in the sample and death rates by cause and by age and race for the United States and its major subdivisions.

The question of how the returns from the sample may be presented in a useful form is of great importance. One of the chief functions of current mortality statistics is to give prompt warning of any change in the underlying force of mortality in the community. However, it may be hazardous in the extreme to draw any conclusion on the basis of a single month's rate. While 95 times out of 100 the month's death rate for cancer in the United States may be estimated within 6 per cent of its actual value, for a number of causes it may be necessary to estimate the rate from so small a number of deaths that by chance alone the estimate could

*Variation Chart Showing Actual, Expected and Expected Variation of Death Rates from Influenza from Mortality Sample for United States for November, 1944–November, 1945*



deviate from the actual rate by 50 per cent or more of its value.\* Further, recognizing that even the complete death experience in an area during a given period of time is still only a sample of an underlying infinite universe, representing the forces of mortality in the community, account must also be taken of the "normal" variation in the monthly rate, that is, the fluctuation which cannot be attributed to epidemic or cyclical origin or to secular or seasonal movement.

Extensive use is made in *Current Mortality Analysis* of a type of graph which has been named "variation chart." Its purpose is to enable the reader to take in at a glance, and in relation to a base, the movement of the death rate over a period of some months and to assist him in evaluating the significance of a deviation in the current rate from this base.

As may be seen in the figure, a variation chart has three chief elements. These are: (1) dots which represent the

values of the monthly death rates as estimated from the sample, (2) a heavy central line which represents the "expected" rate, and (3) a shaded band which is intended to indicate the range about the expected rate within which the rate estimated from the sample may vary without necessarily implying a change in the underlying force of mortality.

The methods used in constructing the variation charts and the assumptions on which they are based have already been described in some detail.<sup>3</sup> However, it may be said here that the expected rate for a cause for a particular month and year is obtained by projecting the long time upward or downward movement found in a time series of death rates for that cause and applying to the projected trend value an index of seasonal variation. For causes displaying a marked secular trend, the expected rate has a marked advantage over some average of past experience such as a median or mean as a base with which to compare the current rates obtained from the sample. The limits of the shaded area, computed from estimates of both the sampling variance and the

\* In practice, the sampling variance is computed from the formula for a random sample taken without replacement.

"normal" variance,\* are designed as far as possible so that under normal circumstances a rate will fall only infrequently above the upper limit.

#### EVALUATION OF THE RETURNS FROM THE SAMPLE

A continuous evaluation of the returns from a sample drawn in 53 separate offices is of the utmost importance. Fortunately a considerable measure of control can be exercised over the sampling process currently as the sample transcripts are received in the Bureau.

The two most common errors in taking the sample are: (1) the drawing of a number of certificates equal to 10 per cent of the deaths plus stillbirths instead of 10 per cent of the deaths alone (an error which may occur in situations where the records of stillbirths are filed with the certificates of death), and (2) taking 1 out of 10 of the certificates for deaths occurring in the current month instead of one-tenth of all the certificates received regardless of the month in which death occurred. The first type of error, giving too large a number in the sample, may usually be discovered by comparing the number of transcripts in the sample with the total number of deaths reported concurrently for the *Monthly Vital Statistics Bulletin*. The second type of error, causing the number in the sample to be too small, becomes apparent when the transcripts are distributed by month of occurrence of the deaths.

In contrast with the majority of sampling situations in which the parameters of the population are never known, the returns from the current mortality sample may be matched in due course of time against the 100 per cent statistics as finally tabulated. The table gives the number of deaths for

various causes, as estimated from the sample, for 44 states and the District of Columbia in 1943 and the corresponding numbers for the same area as tabulated from all registered deaths for the year.

Good agreement is found between the estimated and the final numbers of deaths for the majority of causes listed in the table. Among these are the infectious enteric diseases, the several infectious diseases common in childhood, tuberculosis, influenza, cancer, pellagra, the puerperal causes, and possibly diabetes and syphilis.

On the other hand, the number of deaths for several causes as estimated from the sample are found to differ significantly from the number as finally tabulated. The 1943 sample yielded an overestimate of the number of deaths for pneumonia and for the group of diseases of the cardiovascular-renal system. While the differences may not appear large (less than 3 per cent in the case of pneumonia and about 1 per cent for the cardiovascular-renal group), they are greater than could safely be attributed to chance ( $P = <.05$ ). Further, the 1943 sample yielded underestimates of the number of deaths from suicide, homicide, motor vehicle accidents, and all other accidents.

A deficiency in the number of deaths in the sample from violence and accidental causes was not unexpected in the first year of the sampling program. Where the determination of the cause of death is a subject for a coroner's inquiry, there is necessarily a lag between the date of death and the time at which the certification of the cause of death reaches the state vital statistics office. Consequently, in those instances where provision is not made in the regular office procedure, great care is required to make sure that every certificate for a death from violence or accident has an opportunity to be sampled. The excess in the number of deaths in the sample

\* A third term has been included which in most instances represents a negligible proportion of the total variance represented in the shaded area.

TABLE 1

*Number of Deaths from Selected Causes, Tabulated from Final Figures and Estimated from the 10 Per cent Mortality Sample: 44 States<sup>1</sup> and the District of Columbia, 1943*

(Place of Occurrence)

<i>Cause of Death</i>	<i>Final</i>	<i>Estimated</i>	<i>Percentage Difference</i>
All causes	1,324,917	1,327,560	0.2
Infectious enteric diseases	12,285	12,610	2.6
Typhoid and paratyphoid fever	555	590	6.3
Dysentery	1,339	1,480	10.5
Diarrhea and enteritis	10,391	10,540	1.4
Prevalent diseases of childhood	10,476	10,500	0.2
Cerebrospinal meningitis	2,790	2,760	-1.1
Scarlet fever	422	450	6.6
Whooping cough	2,811	2,890	2.8
Diphtheria	948	940	-0.9
Measles	1,171	1,280	9.3
Poliomyelitis	954	990	3.8
Acute rheumatic fever	1,380	1,190	-13.8
Tuberculosis (all forms)	50,756	50,920	0.3
Malaria	425	560	31.8
Syphilis	14,589	15,260	4.6
Pneumonia and influenza	80,747	83,120	2.9
Pneumonia (all forms)	65,643	67,420	2.7
Influenza	15,104	15,700	3.9
Cancer and other malignant tumors	153,923	154,140	0.1
Diabetes	35,916	34,980	3.1
Pellagra	845	930	10.1
Diseases of the cardiovascular-renal system <sup>2</sup>	601,106	607,080	1.0
Puerperal causes	6,219	5,960	-4.2
Suicide	12,708	11,690	-8.0
Homicide	5,447	4,970	-8.8
All accidents	88,385	83,940	-5.0
Motor vehicle accidents	21,371	19,280	-9.8
All other	67,014	64,660	-3.5
All other causes	253,090	250,900	-0.9

<sup>1</sup> States excluded are: Arkansas, Georgia, Minnesota, and Texas.

<sup>2</sup> Excludes arteriosclerosis and high blood pressure (idiopathic).

from pneumonia and diseases of the cardiovascular-renal system may likewise be traced to specific errors in taking the sample. It is fortunate that this is so, for where a bias is due to an error in taking the sample, the error can be localized and the bias eliminated or reduced. It may be of interest to mention that in two instances the error in sampling was discovered before the data became available for this comparison.

#### BY-PRODUCTS OF THE SAMPLE

Since the sample contains all the detail available in the 100 per cent statistics, and since the sample design permits classification of the data along any axis, the use to which the sample has

been put extends beyond its primary function of giving prompt intimation of gross changes in the death rate for a specific cause. The punch cards accumulated from each month's sample have been combined in various ways and reshuffled for various purposes.

One purpose is to supply federal and other agencies with current statistics beyond those regularly published in *Current Mortality Analysis*. Special tabulations are regularly run each month for a number of federal agencies and others have been made upon request.

The flexibility of the sample, its relative cheapness, and the promptness with which it can be utilized, make it pecu-

liarily adapted for use in situations where it would be impractical, if not impossible, to obtain the required data from the regular tabulations of the 100 per cent statistics. To incorporate an additional item in the regular tabulation program involves not only the cost of coding and punching the item for almost one and a half million records, but requires that it be planned for about a year and a half in advance. Within the limits imposed by the sampling error, the same results may be obtained from the sample, with little delay, and often at less than one-tenth of the cost. This was illustrated on the occasion when the question arose in connection with a pressing administrative problem as to what proportion of the persons dying in each state had been born in that state. To obtain the information, all that was necessary was to take the sample data for 2 months, code and punch state of birth, and retabulate the cards.

At the present time, a number of special items which are not included in the program for tabulating all registered deaths are being coded and punched regularly from the sample returns.

These are: year of birth, length of stay in hospital or institution, associated cause of death, and state of birth. Year of birth is punched for the purpose of obtaining factors required in the construction of life tables, which may be used in distributing the number of children dying at each year of age according to the two possible years of birth. The item, length of stay in hospital or institution, has been introduced for the purpose of determining whether it is sufficiently well reported that it could be used in studying the relation of length of hospitalization to cause of death and to type of institution. In punching the associated as well as the primary cause of death it is hoped that it will be possible to collect in time a useful body of data on the characteristics of those decedents whose deaths are attributed to more than one cause.

#### REFERENCES

1. Bureau of the Census. *Procedures for Current Mortality Sample*, 1945, Feb., 1945.
2. Bureau of the Census. *Evaluation of Provisional Vital Statistics from the Monthly Vital Statistics Bulletin, 1937-1942*, Vital Statistics—Special Reports, Vol. 19, No. 22, 1945.
3. Bureau of the Census. *Description of Methods Used in the Construction of Variation Charts for the Current Mortality Analysis*, Vital Statistics—Special Reports, Vol. 17, No. 26, 1943.

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## The Whole Person

"Today when the medical profession has just about abandoned the effort to cure people by applying specific remedies to their various 'symptoms' and has about learned to think of the organism as a whole, the operation of many specialized health agencies produces

essentially the effect of dealing with isolated aches and troubles rather than with the whole person, to say nothing of the whole public."

Gunn-Platt Report, *Voluntary Health Agencies*, National Health Council, 1945.

# A Group of Paracolon Organisms Having Apparent Pathogenicity\*

L. A. BARNES, COMMANDER, H(S), USNR, F.A.P.H.A., AND  
W. B. CHERRY, LIEUTENANT, H(S), USNR

*Enteric Pathogen Laboratory, Naval Medical School, Bethesda, Md.*

THERE is a large number of heterogeneous coli-like organisms which, having certain physiological characteristics unlike typical *Escherichia*, have been grouped together as paracolon bacilli.<sup>1</sup> Taxonomically they may be considered as occupying a position intermediate between the typical coliforms and the salmonellas.<sup>2</sup> A few sub-groups of paracolon organisms have been described and their importance noted.<sup>2-4</sup> It is the purpose of this communication to describe briefly the characteristics of another sub-group of paracolon bacilli isolated during a small outbreak of gastroenteritis.

## FEATURES OF THE EPIDEMIC

On May 13, 1944, it became apparent that an unusual number of cases of diarrhea were occurring in certain wards of a United States Naval Hospital and investigative procedures were instituted; clinical and epidemiological information was obtained by interviewing 219 patients and staff members. The illness was relatively mild. Only 1 of the 52 patients who were attacked exhibited blood in the stool, while 1 other had fever that was attributable to the disease. In almost all cases recovery was complete within 12 hours; 92.3 per cent of the

cases had diarrhea, the number of diarrheal stools per case averaging 4.8. Percentages of patients with other signs and symptoms were: abdominal cramps, 75.0; nausea, 50.0; and vomiting, 11.5.

Statistical analysis implicated corn pudding as the probable vehicle of the etiologic agent. It was found that this "left-over" food had been substituted for rice in the evening meal the previous day and that it was sent on food carts to the wards affected. As is the case all too frequently, no samples of the corn pudding were available for bacteriologic study. The incubation period averaged approximately 12 hours after eating the suspected food.

## BACTERIOLOGIC STUDIES

Stool or rectal swab specimens for culturing were secured from 17 of the 52 patients; both types of specimens were obtained from 2 subjects and all 4 yielded positive results. All specimens were plated directly onto Difco SS agar and B-B-L Desoxycholate-Citrate agar and also were inoculated into the modified tetrathionate enrichment medium of Kauffmann.<sup>5</sup> After 18 to 24 hours' incubation at 37° C. apparently non-lactose-fermenting colonies were transferred from the plates to agar slants, and plates of SS agar were streaked from the tetrathionate broth cultures. The following morning suspicious colonies were picked from these plates. In all, 28 single-colony

\* The opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.



cultures of the organisms to be described were obtained from 12 of the 17 patients. No other cultures thought to bear an etiologic relationship to the outbreak were found.

Fermentative characteristics of the cultures were studied in glucose, lactose, sucrose, mannitol, xylose, maltose, rhamnose, dulcitol, arabinose, inositol, trehalose, salicin, sorbitol, cellobiose, adonitol, levulose, galactose, mannose, inulin, glycogen, raffinose, milk, and d-tartrate. In addition, the Imvic reactions and hydrogen sulfide production were determined and motility was studied in semi-solid agar.<sup>6</sup> The results of these studies are as follows:

Acid and gas produced in 1 day (all cultures): glucose, mannitol, maltose, rhamnose, dulcitol (one strain remained negative for 23 days), arabinose, trehalose, sorbitol, levulose, galactose and mannose.

Delayed production of acid or acid and gas (all cultures): lactose (2 to 6 days); cellobiose (4 to 9 days).

No visible reaction in 21 days or more (all cultures): inositol, adonitol, inulin, glycogen, and raffinose.

Variable reactions: sucrose, 8 strains were negative for 21 days but the balance produced acid and gas in 1 day; xylose, 3 strains produced no change in 21 days while the remainder produced acid and gas in 1 day; salicin, 11 strains formed a slight amount of acid or acid and gas in 10 to 21 days but the other cultures remained negative for at least 3 weeks.

In B-C-P milk all strains produced a slight acidity that increased slowly during the period of incubation and eventually 5 cultures produced coagulation; all cultures tested were positive in d-tartrate. All cultures produced large amounts of H<sub>2</sub>S, were actively motile, and the Imvic reactions for those studied were —+—+; Koser's citrate solution was the medium used in the last test. Gelatin was not liquefied by

any culture during 10 days' incubation. As can be seen, observations made early in the period of incubation of the cultures show a similarity to the characteristics of the *Salmonella* group but further incubation elicits the traits typical of the paracolon organisms.

In order to test the pathogenicity of the cultures, 5 different strains were injected intraperitoneally into white mice in a dosage of 0.5 ml. of saline suspension prepared from agar slants. Three groups of 3 mice each received sucrose-positive strains and 2 groups of 3 mice each received sucrose-negative cultures. Thirteen mice were dead within 24 hours after injection and the other 2 were obviously ill. Cultures made from the heart's blood of the 9 mice which were autopsied yielded pure cultures of organisms having biochemical reactions identical with those injected.

Drug susceptibility of 1 sucrose-negative and 1 sucrose-positive strain was demonstrated by complete inhibition of growth of the organisms when streaked onto plates of agar containing 5 mg. per cent of sulfathiazole; 1 mg. per cent of the drug in agar resulted in 70 to 90. per cent inhibition of growth.

#### SEROLOGIC STUDIES

Antisera were prepared in rabbits for one of the sucrose-negative and one of the sucrose-positive strains, using formalinized broth cultures as antigens. Sera with high titers for homologous H antigens were obtained. Of some interest, however, is the fact that while use of the sucrose-negative strains resulted in a very high titered serum for the O antigen, the sucrose-positive strain was weakly antigenic in the single rabbit used. Alcohol-heat prepared O antigens<sup>6</sup> of 23 of the 28 strains reacted strongly with appropriate dilutions of both sera. Strangely enough, 5 sucrose-negative strains reacted only with the sucrose-positive serum. For-

malinized broth cultures of 24 strains used as H antigens<sup>6</sup> agglutinated well in a 1:1,000 dilution of serum for the sucrose-negative strain, while 4 strains reacted only with serum for the sucrose-positive strain; no strain reacted with both sera at a dilution of 1:1,000. It appears, therefore, that these epidemic strains are serologically related; their exact relationship to each other and to other Enterobacteriaceae will depend upon extensive antigenic analyses.

Blood samples obtained from 10 of the patients on the second day and from 5 of the same patients on the tenth day following the outbreak failed to reveal significant agglutinin titers when the sera were tested against 3 of the strains. Unfortunately it was not possible to continue these tests further but it is unlikely that agglutination titers would have shown appreciable increases since the illness was transient and there was no evidence of blood invasion.

#### INCIDENCE AND DISTRIBUTION

Subsequent to the recognition of this paracolon sub-group additional strains have been identified; they have been isolated from subjects who were asymptomatic at the time of culturing, from sporadic cases of diarrhea, and at least one other epidemic. In the two latter categories evidences of etiologic relationships were strong. Further details concerning the known distribution of the organisms will be given in a later report.

#### SUMMARY AND CONCLUSIONS

A group of biochemically and serologically related organisms was isolated from patients during a small outbreak of mild gastroenteritis; the disease was self-limited and of short duration. The organisms that appear to have been the etiologic agents possess characteristics that at present classify them as paracolon bacilli; until a more systematic scheme of classification is evolved these cultures are designated as paracolon (Pc.) 100-5-13. Clinical, epidemiological, biochemical and serological features are described briefly.

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#### REFERENCES

1. Topley, W. W. C., and Wilson, G. S. *The Principles of Bacteriology and Immunity*. 2nd ed. Baltimore: Wood, 1938.
2. Stuart, C. A., and Rustigian, R. Further Studies on One Type of Paracolon Organism. *A.J.P.H.*, 33: 1323-1325, 1943.
3. Edwards, P. R., Cherry, W. B., and Bruner, D. W. Further Studies on Coliform Bacteria Serologically Related to the Genus Salmonella. *J. Infect. Dis.*, 73:229-238, 1943.
4. Stuart, C. A., and Van Stratum, E. Antigenic Relationships of Coliform and Related Bacteria Isolated from Infants in the Nurseries of Two Institutions. *J. Pediat.*, 26:464-469, 1945.
5. Kauffmann, F. *Die Bakteriologie der Salmonella-Gruppe*. Copenhagen: Einar Munsgaard, 1941.
6. Edwards, P. R., and Bruner, D. W. Serological Identification of Salmonella Cultures. (Station) *Circ. 54, Ky. Agric. Exper. Sta.*, Lexington, 1942.

# Implication of *Proteus mirabilis* in an Outbreak of Gastroenteritis<sup>\*†</sup>

LIEUTENANT W. B. CHERRY, H(S), USNR., LIEUTENANT  
P. L. LENTZ, H(S), USNR, AND COMMANDER L. A.  
BARNES, H(S), USNR, F.A.P.H.A.

*Naval Medical School, Bethesda, Md.*

ALTHOUGH there are various reports of outbreaks of gastroenteritis in which species of *Proteus* were at least circumstantially involved,<sup>1, 2</sup> with certain exceptions<sup>3</sup> there appears to be a reluctance on the part of investigators to make positive commitments in the question. In a previous publication<sup>4</sup> the junior author called attention to the probable implication of members of the genus *Proteus* in diarrheal diseases in man and the importance of collecting further evidence of etiologic relationships. The purpose of the present communication is to describe a small outbreak during which the predominating organism recovered was *Proteus mirabilis*.

## FEATURES OF THE EPIDEMIC ‡

During the afternoon of December 26, 1944, a number of naval personnel became violently ill with gastroenteritis; all had eaten the noon meal at the mess hall in one of the barracks. Sliced baked ham was suspected as the vehicle of dissemination of the etiologic agent, since it was the article eaten by all the patients; it was placed on the menu

toward the end of the mess period after the original entree was exhausted, with the result that only 50 to 75 portions were served. The ham in question was of the ordinary whole smoked variety and had been baked on December 25 for use on that date. All hams were boned before baking; after this they were placed in galvanized pans to cool prior to slicing. After slicing, the meat was stored in a refrigerator in stainless steel pans until serving on the 25th; sliced ham not needed at this meal was kept in the refrigerator until it was required for use at the noon meal on the 26th. Fortunately, samples of the meat served at the suspected meal were still available for culturing when investigation of the outbreak was begun.

The onset of symptoms averaged 3 hours after ingestion of the suspected food. A total of 29 patients reported to the barracks dispensary and 19 of them were hospitalized; 17 of these were stretcher admissions but the other 2 were ambulatory. As soon as possible after reaching the hospital all patients were questioned individually concerning their symptoms, and specimens for culturing were obtained from 15 of them. All patients had severe nausea and vomiting. Nearly all of them gave a history of almost continual emesis in the acute stage which eventually resulted in bile-finged ejecta followed by watery fluid; blood was found in 2 specimens

\* From the Enteric Pathogen Laboratory, Naval Medical School, Bethesda, Md.

† The opinions or assertions contained herein are the private ones of the writers and are not to be construed as official or reflecting the views of the Navy Department or the Naval Service at large.

‡ Taken in part from a report by Lieutenant H. F. Kruesburg (MC), USNR.

of vomitus. The numbers exhibiting other signs and symptoms were: (a) diarrhea, 18 of 19. The average number of stools per case in 9 patients was 8.9; 3 passed blood and 2 mucus; (b) abdominal cramps, 16 of 19; (c) fever, 3 of 19 with a maximum of 101° F., the other 16 had either normal or sub-normal temperatures, the lowest at admission being 92° F.; (d) evidence of peripheral collapse, 6 of 17 recorded. It was necessary to administer intravenous fluid in 11 of 18 cases recorded. Although the disease was severe, it was of short duration; the average length of illness for 18 patients was 40 hours.

#### BACTERIOLOGIC STUDIES

As mentioned above, a specimen of the ham involved was secured. Specimens were taken from 15 patients as follows: stool and rectal swab, 2; rectal swab and vomitus, 2; rectal swab only, 7; vomitus only, 4. Since it was ascertained that certain food handlers in the serving line during the suspected meal were suffering from concurrent upper respiratory infections, nasopharyngeal cultures were taken from 5 of these individuals; these were not obtained, however, until the 3rd day following the outbreak.

In view of the clinical and epidemiological aspects of the outbreak and previous experiences the laboratory procedures used recognized the possibility that one of two broad groups of bacterial species might have been the etiologic agent: (a) hemolytic, toxigenic strains of staphylococci or streptococci; or, (b) one of the groups of Gram-negative enteric bacilli, particularly of the genus *Proteus*. Cultural methods employed were as follows:

A. *Ham*.—Five grams selected to represent both the outer fatty and inner lean portions were triturated under sterile conditions with sand in a mortar until a smooth mixture was obtained. From the resulting suspension, 1.0 ml.

amounts of various dilutions were cultured in blood agar pour plates to represent in terms of the original ham 0.125, 0.005, 0.0005, and 0.00005 gm. respectively; in addition, a loopful each of undiluted suspension was streaked directly onto a blood agar plate and a plate of SS agar. To the remainder of the ham was added sterile tryptose phosphate broth from which, after suitable incubation, SS agar plates were streaked.

After 48 hours' incubation at 37° C., total bacterial counts were made from the blood agar plates. The average number of bacteria per gm. of original ham as calculated from the 3 highest dilutions was between 60,000 and 62,000; the counts at each dilution were satisfactorily consistent. Upon macroscopic study of the colonies and microscopic examination of a representative number it was found, however, that less than 20 per cent of the total growth was hemolytic and morphologically characteristic of *Staphylococcus aureus*, thus yielding an estimated count of fewer than 12,000 staphylococci per gm. of meat; growth of streptococci was completely insignificant. These findings were, therefore, markedly discrepant from the "hundreds of millions" of these organisms usually found in foods causing staphylococcal food poisoning.<sup>5</sup>

Essentially a pure culture of Gram-negative bacilli in large numbers was obtained on the SS agar plates streaked from the ham-tryptose-phosphate broth culture.

B. *Vomitus*.—The 6 specimens were each streaked onto blood agar plates and onto SS agar plates. Following suitable incubation and subsequent study no evidence of an etiologic relationship was found concerning a minimum number of what appeared to be beta-hemolytic streptococcal colonies that grew on the blood agar plates inoculated from 3 specimens.

From 3 of the 6 specimens streaked onto SS agar were obtained heavy growths of colonies of Gram-negative bacilli that were similar to those found in the ham-broth culture.

*C. Fecal Material*—Seven of 11 rectal swab specimens that were cultured on SS agar yielded large numbers of colonies of Gram-negative bacilli similar to those found in the ham-broth culture; there were very few colonies of other organisms. A stool specimen obtained from a patient from whom a rectal swab specimen was positive also yielded typical colonies on SS agar.

*D. Throat Cultures*—Nasopharyngeal, and in 1 case also peri-tonsillar, swab specimens were taken from 5 food handlers; these were cultured on blood agar plates in the usual manner. No growth of pigmented, hemolytic or otherwise significant colonies was obtained from 4 subjects. From both specimens taken from the other individual cultures of what appeared to be beta-hemolytic streptococcal colonies were obtained; further study, however, failed to reveal any etiologic relationship.

In all, 12 representative cultures of the Gram-negative bacillus obtained in predominance were selected for further study. The sources of these strains were as follows: ham, 1; rectal swab, 7; stool, 1; vomitus, 3. Only 9 patients are represented since in one instance both a stool and swab specimen were positive and in another the organism was recovered from both swab and vomitus specimens.

Biochemically, the 12 cultures were identical and were typically *Proteus mirabilis*. They produced acid and gas within 24 hours in glucose, xylose, and trehalose; acid and gas formation in sucrose was delayed for 2 to 4 days. The cultures actively hydrolyzed urea and produced large amounts of hydrogen sulfide within 24 hours; they were motile, they liquefied gelatin within 2

days and reduced trimethylamine oxide. The strains failed to ferment lactose, mannitol, maltose, rhamnose, dulcitol, arabinose, inositol, salicin, sorbitol, or adonitol during 14 days' incubation; all failed to utilize Koser's citrate and none produced indol.

#### SEROLOGIC STUDIES

Two of the strains were selected for immunizing rabbits; 1 (No. 527) was the culture isolated from ham and the other (No. 498) was from the stool specimen of a patient. Formalinized broth cultures of the organisms were too toxic to rabbits for immunization purposes. Antigens for inoculations were made by suspending the 18–24 hour growth on agar in physiologic saline containing 0.3–0.4 per cent formalin; previous passage of the cultures through semisolid agar<sup>6</sup> insured a maximum of flagellar elements. The initial dosage was 0.2 ml. of the suspension diluted to contain approximately 1 billion organisms per ml.; 5 subsequent injections were given in amounts of 0.5, 1.0, 2.0, 2.0 and 2.0 ml., respectively. All inoculations were administered intravenously and the interval was either 4 or 5 days. The rabbits were bled from the heart on the 8th day after the last dose of vaccine.

Both sera were tested for O and H agglutinin titers against all 12 strains. The O and H antigens were prepared from smooth cultures by the methods employed for salmonellas.<sup>6</sup> The O titers were significantly strong for all strains with both sera through a dilution of 1:80, indicating that the somatic antigens were similar if not identical. Essentially equally strong H reactions were obtained with both sera when tested in dilutions of 1:5,000, 1:10,000, and 1:20,000 against the 12 strains thus suggesting that the H antigens were also closely related if not identical.

In order to test further the identity

of the somatic and flagellar antigens, adsorptions of the 2 sera were made as follows: (a) serum homologous for the ham strain (No. 527) adsorbed with a stool strain (No. 498) and another portion adsorbed with a strain isolated from vomitus (No. 512); (b) serum homologous for the stool strain (No. 498) adsorbed with the ham strain (No. 527) and a second portion adsorbed with the vomitus strain (No. 512). The results of these adsorptions and subsequent agglutination tests are shown in Table 1.

demics of enterointoxication. It is possible that higher staphylococcal counts might have been obtained if additional specimens of the ham had been cultured; under the same conditions, however, larger numbers or Gram-negative bacilli might also have been found. It is somewhat unfortunate that it was not possible to conduct tests for enterotoxigenicity; such tests are frequently omitted when the bacterial counts are as low as those reported in this paper. Although no tests were done for the detection of a poisonous chemical agent,

TABLE 1  
*Agglutination of Pr. mirabilis Strains*

Serum	Serum Adsorbed by Culture No.	Ham — No. 527		Stool — No. 498		Vomitus — No. 512	
		"O" *	"H" **	"O"	"H"	"O"	"H"
Stool No. 498	Unadsorbed	+	+	+	+	+	+
	512	—	—	—	—	—	—
	527	—	—	—	—	—	—
Ham No. 527	Unadsorbed	+	+	+	+	+	+
	498	—	—	—	—	—	—
	512	—	—	—	—	—	—

\* + = Significant agglutination in 1:80 dilution or higher; — = no agglutination in any dilution down to 1:2½.

\*\* + = Significant agglutination in dilutions through 1:20,000; — = no agglutination in any dilution down to 1:100.

The other 9 strains were tested with the two sera, unadsorbed and adsorbed, as shown above, with identical results. The evidence indicates, therefore, that the strains isolated from patients were all serologically identical with the strain isolated from the ham.

#### DISCUSSION

The failure, by the usual methods, to implicate members of the staphylococcal or streptococcal species in the outbreak does not necessarily exclude these organisms as possible causative agents. The number of staphylococci found per gm. of meat appears to be more nearly consistent with normal bacterial counts than with the markedly excessive numbers found when these organisms have been etiologically incriminated in epi-

the incubation period and, in part at least, the symptomatology are not consistent with such a diagnosis.

The demonstration of what appear to be identical strains of *Proteus mirabilis* in the suspected food and in vomitus and fecal specimens of 9 of the patients does not prove, but strongly suggests the etiologic relationship of this organism. The incubation period, symptoms, and convalescence are all consistent with this opinion in view of the report by English workers.<sup>3</sup> It was not possible to conduct tests for the enterotoxigenic properties of the strains isolated, but broth cultures have been uniformly fatal in small doses when administered intravenously to rabbits. The short incubation period also suggests that a bacterial toxic substance

played an important part in the symptomatology. The fact that the organisms were recovered in large numbers from the feces of several patients may well point to a transient but definite infection of the intestinal mucosa. In a series of observations to be reported later, some supportive evidence will be presented concerning the probable part played by members of the genus *Proteus* in sporadic and epidemic cases of gastroenteritis.

#### SUMMARY AND CONCLUSIONS

Strains of *Proteus mirabilis* that were apparently identical biochemically and serologically were isolated from suspected ham and from 9 of 19 patients who became violently ill with gastroenteritis after eating the food. Attempts to demonstrate a causal relationship of

staphylococci or streptococci were unsuccessful. It is believed that the studies furnish strong circumstantial evidence of the probable etiologic relationship of *Proteus mirabilis*. Clinical, bacteriological, and serological observations are described briefly.

#### REFERENCES

1. Jordan, E. O., and Burrows, W. The Production of Enterotoxigenic Substance by Bacteria. *J. Infect. Dis.*, 57:121-128, 1935.
2. Klieman, I., Frank, S., and Abrahamson, A. E. Food Poisoning Outbreaks Involving Smoked Fish—Their Epidemiology and Control. *A.J.P.H.*, 32:151-158, 1942.
3. Cooper, K. E., Davies, J., and Wiseman, J. An Investigation of an Outbreak of Food Poisoning Associated with Organisms of the Proteus Group. *J. Path. & Bact.*, 52:91-98, 1941.
4. Barnes, L. A. Pathogenic Enteric Bacilli. I. Paracolon, Proteus and Pseudomonas Groups. *U. S. Nav. M. Bull.*, 43:707-716, 1944.
5. Dack, G. M. *Food Poisoning*. Univ. Chicago Press, Chicago, 1943.
6. Edwards, P. R., and Bruner, D. W. Serological Identification of Salmonella Cultures. (Station) *Circ.* 54, Kentucky Agric. Exper. Sta., Lexington, 1942.

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## Dental Care in UNRRA Camps

Lt. Col. George A. Nevitt, Chief Dental Consultant at UNRRA's London Headquarters, recently announced that dental care is now available for 1,300,000 displaced persons in camps in Germany, Austria, and the Middle East. The basic treatments, consisting of extractions, fillings, treatments of diseases of the mouth, and replacement

of missing teeth, are given by displaced dentists in the camps. Their work is supervised by six UNRRA area dentists and the camp health experts.

UNRRA has provided 100 complete units of dentistry equipment in Greece; it has also provided six scholarships to Greek dentists for postgraduate work in the United States and Britain.

# Public Support for Multiple County Health Departments

RICHARD F. BOYD, M.D., M.P.H., F.A.P.H.A.

*Chief, Division of Local Health Administration, Illinois Department of Public Health, Springfield, Ill.*

DURING the past several years there has been an ever increasing tendency for adjacent counties to pool their efforts and resources in the protection of their peoples against public health hazards by the formation of multiple county health departments. Dr. F. W. Kratz has called attention to the fact that in 1935 there was a total of 561 full-time health departments in the United States.<sup>1</sup> Of these, 41 were local district (multiple county) health departments. In 1942 the total number of full-time health departments had increased to 975, while local district (multiple county) health departments had increased to 187. Thus, in 1935, local district (multiple county) health departments represented 7.3 per cent of the full-time health departments in the United States, while in 1942 this percentage had increased to 19.2 per cent. Admittedly, some of the increase in the number of multiple county health departments during this period may be attributed to the fact that adjacent counties having full-time single county health departments were forced to share a health officer because of the shortage of personnel due to the world conflict. However, the writer is of the opinion that in many instances this may have proved to be a wholesome situation, since in the past, all too frequently, health officers were found to be serving small populations. This often represented a waste of public health manpower. The Subcommittee on Local

Health Units of the American Public Health Association proposes that one health officer with adequate training and experience should serve a population of not less than 50,000 persons, even with assistance on a part-time basis from local medical practitioners for certain public health programs.<sup>2</sup>

In order that multiple county health departments may be established it is necessary either that legislation exist permitting or requiring this procedure, or that at least there be no statutory contraindication to this arrangement. In Illinois we are fortunate in this respect. A statute commonly known as the Searcy-Clabaugh County Health Department Law was enacted in Illinois in 1943.<sup>3</sup> This legislation permits any county or two or more adjacent counties to establish and maintain a full-time health department. If four or more counties wish to establish a multiple county health department, it is necessary that permission for this combination be obtained from the State Department of Public Health. Of the 26 states listed by Emerson as having laws relative to county or multiple county health departments, 22 appear to provide for the organization of multiple county health departments.<sup>4</sup> It is noted that a considerable amount of the legislation relative to multiple county health departments was enacted only recently. This appears to indicate a wholesome trend.

The mere existence of legislation per-



mitting the establishment of multiple county health departments is, of course, only a first step. In order that multiple county health departments may be established, public interest and support are necessary. It is also realized that it is more difficult to arouse simultaneous interest and support in two or more counties in a proposal for the establishment of a multiple county health department than is the case when only one county is involved. In order that this necessary interest and support may be aroused and maintained, a number of factors must be considered in selecting counties for consolidation.

It would appear desirable that the public health problems of the counties involved be similar in character. This enables the attention of the populations involved to be focused upon similar public health situations. It is also considered important that the folkways and mores of the people of the counties involved be the same. In general, the habits and customs of peoples in contiguous counties are the same. There are, however, exceptions, and when such situations come to light, a rearrangement of plans for consolidation may frequently avoid difficulty. It is also believed that the consolidation of counties which are rather similar in regard to per capita wealth and population is desirable. When an attempt is made to promote the consolidation of a rich and a poor county, or a populous and a sparsely populated county, the people of the rich or populous county are often fearful that they will have to assume the burden of "a poor relative." On the other hand, the people of the poor or sparsely populated county are fearful that the lion's share of services of the health department will be received by the rich or populous county. Truly enough, this situation can be overcome by careful explanation and the institution of certain safeguards, but can often be avoided entirely by carefully choos-

ing the counties for a proposed multiple county health department.

One usually finds also that a county which is essentially industrial does not consolidate smoothly with a county which is chiefly agricultural in nature. The public health problems of counties of these types usually differ rather markedly, and the people of the latter county tend to be more conservative than those of the former. A factor which is of a very practical nature, and one which may at first be overlooked, is that of travel facilities between the two counties, and especially between the two county seats. This is a situation which is immediately recognized by local groups but is all too frequently neglected by public health administrators who attempt to lay plans for the consolidation of health services from their offices in the state health department.

Much of the foregoing may appear irrelevant to the subject of public support for multiple county health Departments. However, I believe that many public health administrators who have had practical experience with these problems will recognize the validity of these statements.

To come to the subject for discussion, the person or persons who are seeking public support for a proposed multiple county health department will recognize that this support must come from several sources. The proposal must have the support of the governing bodies of the counties involved, since in many cases they will be relinquishing certain powers and duties, and these groups are made up of the persons who will make possible an appropriation for the financial support of the health department.

It should also be pointed out that, although powers and duties are often lost by individuals at the time of the establishment of a multiple county health department, the governing bodies

of the individual counties frequently acquire additional strengths at this time. For example, in Illinois the establishment of a multiple county health department results in the automatic abolition of all Township Boards of Health, thus decreasing the powers and duties of the individual supervisors of townships. However, the County Boards of Supervisors are enabled, after the establishment of a full-time health department, to adopt rules and regulations relating to public health matters, a power which they lacked prior to the establishment of the full-time health department.

The interest and support of professional groups will need to be aroused, since the attitude of the members of the local medical and dental professions will carry much weight with the county officials and the public. The active coöperation of these organized groups is also necessary for the successful operation of the health department after establishment. Of course, the interest and support of the citizens of the counties involved must be obtained. The attitude of the public will exert much influence on the governing bodies of the county and, in some instances, as will usually be the case in Illinois, a favorable vote by the electorate in a referendum is necessary in order that a multiple county health department may be established.

The immediate reaction of the members of the governing bodies of counties for which consolidation is proposed will usually depend upon their experience in the past with the officials of the county or counties with which combination is suggested. If this relationship has been a pleasant one, the proposal is apt to be favorably received from the outset. On the other hand, if the relationship has been unpleasant, a great deal of careful explanation of the provision safeguarding the interests of the individual counties will be necessary. These explana-

tions, supported by manifest public approval, will often prove effective in obtaining the support of the county officials to the extent of securing the appointment of a group of individuals from each governing body to serve on a joint committee to give further consideration to the proposal. Meetings of such a committee make possible a thorough discussion of the proposition and joint consideration of the interests and problems involved. These meetings also make it possible for the officials of the counties to develop acquaintanceships which will be helpful in maintaining the support of the governing bodies for the health department after establishment.

Fortunate is the public health administrator who finds that the professional societies of the counties suggested for consolidation either exist as a joint county society or have frequent joint meetings. If such is the case the development of the support of these groups is usually greatly facilitated. At any rate, it is desirable that in this instance also joint committees be appointed from the professional societies to give consideration to the proposal and discuss the principles involved. Out of such committee meetings will usually come the support and coöperation desired.

In Illinois we are very fortunate in having as an effective tool for the development of public interest and support for local health services a Statewide Public Health Committee. This committee was formed in 1942 because of a recommendation growing out of a survey of the Illinois Department of Public Health by the Committee on Administrative Practice of the American Public Health Association.<sup>5</sup> The Statewide Public Health Committee consists of influential persons throughout Illinois having a known interest in public health matters. It was established for the purpose of arousing public interest in a statute permitting coun-

ties to establish and maintain full-time local health departments, and after or coincident with the enactment of this legislation to develop public interest in each county in good local health services. The legislation mentioned above having been obtained in 1943, the Statewide Public Health Committee is now devoting the major portion of its efforts toward the implementation of the plan which has been developed by the Illinois Department of Public Health for the complete coverage of the state with county and multiple county health departments.<sup>6</sup>

County components of the Statewide Public Health Committee have been organized in a number of Illinois counties. When interest is found in the development of a multiple county health department, the county components of the Statewide Public Health Committee, if existing already, are swung into action. If such committees do not exist there will usually be found in each of the counties members of the Statewide Public Health Committee who can be used as nuclei for the organization of such committees. From these groups a joint committee is appointed to discuss the suggestion for the development of a multiple county health department and study the local health problems of the area. After issues have been clarified through this study, various existing organizations in each county are approached and acquainted with the proposal and their active coöperation and support are solicited. By this means a substantial cross-section of the opinion of both counties is reached and a favorable attitude toward the proposal is engendered.

The discussion heretofore has related principally to the development of coöperation and support of various organizations and groups to the end that a multiple county health department be established. A continuation of this public support after establishment is,

of course, necessary if the health department is to operate successfully. In order to assure the continuation of this interest, the joint committee set up prior to the establishment of the health department should be perpetuated. The joint committee of the governing bodies of the counties will find it necessary from time to time to discuss the responsibilities of each body in regard to the financing of the health department. These and other problems will act as stimuli to keep the interest of this group alive. The joint committees of the professional groups could logically grow into advisory committees to the health department. It is also usually considered desirable procedure to permit the professional groups to make nominations for the appointment of the professional members of the multiple county Board of Health which, under the County Health Law in Illinois, consists of three persons from each county, one from each county being a physician and one member of the multiple county Board of Health being a dentist. Responsibilities of this type which fall upon the professional groups will aid in maintaining their interest. The joint committee of the County Public Health Committees could in similar manner become the lay advisory committee to the health department. This committee can serve to protect the health department by vigorously supporting the appointment of a multiple county Board of Health composed of competent and interested persons, by promoting the appointment of a well trained staff for the health department, and supporting the health officer in obtaining an adequate budget for the department. Similarly, the county public health committees from which the joint committee was appointed should continue to function, since they will need to support the lay advisory committee in its endeavors and, having studied the public health situations of their respec-

tive counties, can interpret to the health officer local public health problems which are in need of solution.

In conclusion, public support of multiple county health departments depends upon the following factors:

1. Adequate legislation.
2. Care in the selection of counties for consolidation
3. Interest and coöperation of governing bodies
4. Interest and coöperation of professional groups
5. Strong lay public health committees

6. A populace which has been made conscious of their public health problems

#### REFERENCES

1. Kratz, F. W. Status of Full-Time Local Health Organization at the End of the Fiscal Year 1941-42. *Pub. Health Rep.*, 58:9 (Feb. 26), 1943.
2. Emerson, Haven. *Local Health Units for the Nation*, Chap. 1, p. 2. The Commonwealth Fund, 1945.
3. *Illinois Revised Statutes 1943*, Chap. 111½, Sec. 20c.
4. Emerson, Haven. *Local Health Units for the Nation*, Chap. 5, p. 332. The Commonwealth Fund, 1945.
5. Buck, Carl E. *Public Health in Illinois*. Pages 24-25, Committee on Administrative Practice, American Public Health Association, 1942.
6. Emerson, Haven. *Local Health Units for the Nation*, Chap. 4, p. 83-92. The Commonwealth Fund, 1945.

## State Geriatrics Institute Planned for May

A one-day geriatrics institute sponsored by the Indiana University School of Medicine and the Indiana State Board of Health will be held in the auditorium of the Indiana University School of Medicine May 22. The purpose of the institute is to study the process of aging, the problems of the aged, and the more common diseases and disabilities associated with aging. In attendance will be physicians interested in geriatrics, educators, dentists, nurses, social workers, representatives of industry and labor and, in fact, all who may have an interest in the medical, social, and economic problems connected with the rapidly increasing age of our population.

The forenoon session of the institute will be devoted to a discussion of Health Guidance in Maturity, Mental Hygiene and Geriatrics, with a symposium on diseases of advancing years including cardiovascularrenal diseases, arthritis, cancer, eye and ear diseases, and hormone therapy. Dr. W. D. Gatch, Dean of Indiana University School of Medicine, will preside at the forenoon session.

Dr. L. E. Burney, State Health Commissioner, will preside at the afternoon session. The program will be devoted to an address on geriatric medicine by Dr. E. J. Stieglitz, Washington, D. C., Consultant in Gerontology to the National Institute of Health, and author of a book on geriatric medicine. As a further part of the afternoon program the subject, Aging as an Industrial Health Problem, will be discussed by a representative of labor, a representative of management and an industrial physician.

A public meeting in the evening to be addressed by a speaker of national reputation and experience is planned as a conclusion to the institute. All the facilities of the Indiana University School of Medicine and of the State Board of Health will be devoted to making this institute a success and in creating a widespread interest, both professional and public, in the purpose of the institute.

The program will begin at 9 A.M., continue throughout the day, and close with the evening meeting for the general public.

# Tularemia

A Report on 40 Cases in Alberta, Canada, 1931-1944

MALCOLM R. BOW, M.D., D.P.H., F.A.P.H.A., AND  
JOHN H. BROWN, M.Sc.

*Deputy Minister of Health, and Public Health Entomologist, Department of  
Public Health, Edmonton, Alberta, Canada*

TULAREMIA was first recorded in Alberta in 1932 when Shaw and Jamieson<sup>5</sup> reported a case that occurred at Tofield in 1931. The next record was by Wright<sup>6</sup> in 1935 when he reported two cases in the Athabasca district. In 1939 Brown<sup>3</sup> reported a tick-transmitted case, and in 1943 Bow and Brown<sup>2</sup> reported two cases at

Whitla. In 1945 Bell<sup>1</sup> reported a case contracted by a packing-plant employee.

## INVESTIGATIONS

On account of the fact that tularemia simulates so many other diseases it is difficult to diagnose clinically. In Alberta prior to 1934 blood tests were carried out only on those cases which

TABLE 1  
Accepted Cases by Years

Year	Month	Name	Sex	Age	Location	Agglutination Titer	Contact	Result
1931	October	P.B.	M	53	Tofield	1- 5,000	Rabbits	Recovered
1934	July	W.I.	M	55	Berrymore	1- 800	"	"
	August	O.S.	M	48	Wabamum	1- 800	"	"
	September	Mrs. W.S.	F	44	Prosperity	1- 200	"	"
	October	F.W.	M	16	Perryvale	1- 1,600	"	"
	October	H.F.	M	31	Jasper	1- 1,600	Cat bite	"
	October	R.B.	M	22	Gainford	1- 320	Rabbits	"
	November	Mrs. J.P.	F	32	Edmonton	1- 800	Grouse	"
	November	Mrs. B.	F	60	Edmonton	1- 800	Rabbits	"
1935	June	Mrs. P.	F	40	Winterburn	1- 1,600	"	"
1936	July	H.D.	M	16	St. Paul	1- 1,600	Ground squirrels	"
	December	D.H.	M	?	Taber	1- 1,600	Not known	"
1939	May	T.M.	M	30	Walsh	1- 400	Tick bite	"
1940	May	Mrs. M.L.	F	?	Grimshaw	1- 6,400	Rabbits	"
	June	Mrs. W.M.	F	30	Whitla	1- 1,600	Tick bite	"
	June	L.Y.	M	?	Winterburn	1- 6,400	Rabbits	Died
	July	Miss F.L'H.	F	?	Grimshaw	1- 3,200	Not known	Recovered
	July	F.R.	M	?	Grimshaw	1- 6,400	Rabbit bite	"
	October	Miss N.S.	F	16	Vegreville	1- 3,200	Rabbits	"
1941	July	Mrs. H. LaR.	F	34	Prairie Echo	1- 400	"	"
	August	W.B.	M	?	Notikewin	1- 800	"	"
	August	Miss L.	F	17	Prairie Echo	1- 1,600	"	"
	September	J.G.	M	?	Macleod	1-12,800	"	"
	November	T.S.	M	62	Pibroch	1-51,600	Not known	"
1942	April	M.L.	M	49	Whitla	1- 400	Tick & sheep	"
	June	E.A.	M	58	Grimshaw	1- 3,200	Rabbits	"
	August	H.M.	M	?	Radway	1- 6,400	Ground squirrels	"
	August	N.P.	M	14	Plamondon	1- 400	Rabbits	"
	September	J.W.	M	59	Anton Lake	1-12,800	Not known	Died
	October	E.B.	M	11	Ft. Assiniboine	1- 400	Rabbits	Recovered
1943	May	M.K.	M	36	Edmonton	1- 1,600	Swine	"
	June	G.O.	M	40	Cold Lake	1- 800	Mink & cat bites	Died
1944	February	G.H.	M	51	Barrhead	1- 200	Skunk	Recovered
	June	F.S.	M	14	Lake Isle	1- 3,200	Rabbits	Died
	June	Mrs. A.D.	F	?	Nakamun	1- 400	"	Recovered

the attending physician suspected as being tularemia. However, in that year the Provincial Laboratory began to include *Pasteurella tularensis* as an antigen in routine agglutination tests for typhoid and related organisms. By this means a small number of cases of tularemia were found that might otherwise have been missed.

Some of the blood sera examined agglutinated *P. tularensis* to a low titer only and, as the patients concerned did not present clinical evidence of tularemia, it was considered that the positive reaction might have been due to an old infection or some other cause. Such deduction follows the theorizing of Francis and other eminent workers in the field of tularemia. However, these routine tests proved of great assistance in the diagnosis of some obscure cases.

The following report is based on material collected from physicians and hospitals, and supplemented by laboratory findings. The cases are divided into groups: Group I: Accepted Cases; Group II: Probable Cases.

#### GROUP I

##### Accepted Cases

Cases were accepted as proven when

there were a clinical picture of tularemia; a history of exposure to a source known to be capable of transmitting tularemia; and satisfactory laboratory findings.

Since 1931 a total of 35 such cases, of which 4 were fatal, have occurred. They are recorded in Table 1.

Table 1 contains considerable information that is worthy of examination. Therefore, the table will be broken down for a detailed analysis of its various parts.

In 1934, which marked the inception of the routine laboratory tests, 8 cases were located. From then until 1940 only 4 cases were reported. In 1940 6 cases, in 1941 5 cases, in 1942 6 cases, in 1943 2 cases, and 1944 3 cases, were recorded. There is no indication in

TABLE 2

Number of Cases per Year

Year	Cases
1931.....	1
1934.....	8
1935.....	1
1936.....	2
1939.....	1
1940.....	6
1941.....	5
1942.....	6
1943.....	2
1944.....	3

TABLE 3

Monthly Cases with Contacts

Contact	January	February	March	April	May	June	July	August	September	October	November	December	Total
Rabbits	..	..	..	..	1	5	..	..	..	..	..	..	21
Ground squirrels	..	..	..	..	..	..	1	1	..	..	..	..	2
Cats	..	..	..	..	..	1 <sup>1</sup>	..	..	..	..	..	..	3
Ticks	..	..	..	1 <sup>2</sup>	2	..	..	..	..	..	1	..	1
Grouse	..	..	..	..	..	1 <sup>1</sup>	..	..	..	..	..	..	1
Mink	..	..	..	..	..	..	..	..	..	..	..	..	1
Sheep	..	..	..	1 <sup>2</sup>	..	..	..	..	..	..	..	..	1
Swine	..	..	..	..	1	..	..	..	..	..	..	..	1
Skunk	..	1	..	..	..	..	1	..	1	..	1	1	4
Unknown	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	..	1	..	2	4	7	5	5	3	6	3	1	37

<sup>1</sup> Both cat and mink involved as probable source in the one case.

<sup>2</sup> Both ticks and sheep involved as a source of infection as the patient had been skinning sheep dead from tularemia, and had also been bitten by infected ticks (Gwatkin, et al.<sup>4</sup>).

Table 2 that human tularemia in Alberta follows a cyclic pattern.

It is interesting to note that of the 35 cases, 26 occurred during the period June to October, inclusive. As tularemia is a disease that is mainly contracted through contact, such a distribution indicates that epidemiological studies might be productive of information of value.

The fact that only 21 of the cases were traced to contact with rabbits indicates that, although rabbits are the main source of infection, the sources, and potential sources, of tularemia are many and varied. There is a definite seasonal relationship of cases due to contact with rabbits, with all of the cases occurring during the period May to November, inclusive.

As the spotted fever tick is only active during the spring and early summer, seasonal human cases due to it are easily explained.

Tularemia infection in ground squirrels has been reported from three widely separated areas in Alberta. As these animals are active only during the warm seasons, it is natural to expect that they would be recorded as a source of human infection during the summer.

#### A SUMMARIZATION BY YEARS OF ACCEPTED CASES

##### 1931

1. P.B., male, age 53; Tofield  
Hospitalized—Nov. 6 to Nov. 23  
Agglutination titer—1-5,000  
Contact—Handling rabbits  
Result—Recovered  
Remarks—Pleural fluid inoculated into guinea pig produced *P. tularensis* infection. Organism isolated in pure culture from infected guinea pigs. (Reported: Shaw & Jamieson<sup>51</sup>)

##### 1934

1. W.I., male; age 55; Berrymore  
Hospitalized—July 7 to Aug. 20  
Agglutination titer—1-800, Aug. 7, 1934  
1-100, Dec. 3, 1934  
Contact—Skinning rabbits  
Result—Recovered

Remarks—Infection through finger prick.  
Painful left axilla and general body pains

2. Mrs. W.S., age 44; Prosperity  
Hospitalized—Aug. 15, 1934  
Agglutination titer—1-200, Aug. 20  
Contact—Skinning rabbits on Sept. 30, 1933 to feed dogs  
Result—Recovered  
Remarks—(Reported by Wright<sup>62</sup>)
3. O.S., male, age 48; Wabamum  
Hospitalized—Oct. 7 to Oct. 20  
Agglutination titer—1-800, Aug. 22, 1934  
Contact—Skinning rabbits  
Result—Recovered  
Remarks—Scratch on left hand "festered."  
Soreness and palpable gland in axilla
4. R.B., male, age 22; Gainford  
Hospitalized—Oct. 19 to Dec. 31  
Agglutination titer—1-320, Feb. 22, 1935  
Contact—Handling rabbits  
Result—Recovered  
Remarks—"He felt well as usual until May, 1934, when he developed what was considered bronchial pneumonia. He was sick for two weeks, lost 51 lbs., had a high fever, and was, I believe, x-rayed at that time. He felt well from the middle of August till September, when he developed severe chill and pain in the region of the bladder and had difficulty in micturition. Temperature 99 to 101° for two weeks, with some night sweats. About October 1, 1934, he developed a cough.  
On discharge from the Sanatorium, December 31, 1934, it was considered that this patient had a nontuberculous pneumonia involving the right upper chest and that he had almost completely recovered.  
Subsequent to his discharge from the Sanatorium, it came to the attention of the attending physician that this young man had been handling rabbits to some extent. A specimen of blood submitted to the Provincial Laboratory, gave the usual findings for tularemia"
5. Mrs. J.P., age 32; Edmonton  
Hospitalized—Nov. 2 to Nov. 28  
Agglutination titer—1-800, Nov. 6, 1934  
Contact—Cleaning grouse  
Result—Recovered  
Remarks—Infection of finger followed by enlarged axillary glands
6. F.W., male age 16; Perryvale  
Hospitalized—Nov. 26 to Nov. 30  
Agglutination titer—1-1,600, Dec. 3, 1934  
Contact—Skinning rabbits  
Result—Recovered

Remarks—Pus under fingernail of right hand, and a small lump in right axillary space. (Reported by Wright<sup>6</sup>)

7. Mrs. B., female, age 60; Edmonton  
Hospitalized—(no)

Agglutination titer—1-800, Dec. 5, 1934

Contact—Skinning rabbits

Result—Recovered

Remarks—She received a scratch from a bone sliver while dressing a rabbit. Lymphangitis resulted, followed by pneumonia

8. H.F., male, age 31; Jasper  
Hospitalized—Oct. 12 to Nov. 5

Contact—Bite of cat

Result—Recovered

Remarks—Bite on thumb

Re-hospitalized—Dec. 3, 1934 to Jan. 3, 1935

Agglutination titer—1-1,600, Dec. 7, 1934

Result—Recovered

Remarks—Swelling appeared in axilla Nov. 15 and was very painful, also painful swelling on arm

### 1935

1. Mrs. P., female, age 40; Winterburn  
Not hospitalized  
Agglutination titer—1-1,600, June 22, 1935  
Contact—Rabbits  
Result—Recovered  
Remarks—Infection in hand and arm

### 1936

1. H.D., male, age 16; St. Paul  
Hospitalized—July 19 to Aug. 3  
Agglutination titer—1-1,600, Aug. 11, 1936  
Contact—Ground squirrels  
Result—Recovered

Remarks—Infection through cut on left hand while skinning ground squirrels

2. D.H., male, age unknown; Taber  
Not hospitalized  
Agglutination titer—1-1,600, Dec. 9  
Contact—Not known  
Result—Recovered  
Remarks—Glandular tularemia involving the axillary and mediastinal glands

### 1939

1. T.M., male, age 30; Walsh  
Hospitalized—May 11 to July 2  
Agglutination titer—1-100—May 25  
1-400—June 1  
1-200—June 22  
1-200—June 29  
1-100—Aug. 4  
1-100—Sept. 18

Contact—Tick bite

Result—Recovered

Remarks—Tick bites on scrotum and chest.

Clinical diagnosis—typhoidal tularemia

### 1940

1. Mrs. M.L., female, age unknown; Grimshaw  
Hospitalized—May 21 to June 7  
Agglutination titer—1-6,400, June 1, 1940  
Contact—Rabbits  
Result—Recovered

Remarks—Cut hand while skinning rabbits

2. Mrs. W.M., female, age 30; Seven Person's Coulee (Whitla)  
Hospitalized—June 7 to July 23  
Agglutination titer—1- 200—June 19  
1-1,600—June 22  
1-1,600—June 24  
1- 800—Sept. 3  
1- 400—Nov. 7

Contact—Tick bite

Result—Recovered

Remarks—Tick bite on inner part of left leg

Clinical diagnosis—Typhoidal tularemia

3. L.Y., male, age unknown; Winterburn  
Hospitalized—June  
Agglutination titer—1- 200—June 18  
1-1,600—June 20  
1-6,400—June 24

Contact—Rabbits

Result—Died

Remarks—Organism isolated from ulcer, June 25, by guinea pig inoculation

4. F.R., male, age unknown; Grimshaw  
Not hospitalized  
Agglutination titer—1-6,400, July 17, 1940  
Contact—Rabbits  
Result—Recovered  
Remarks—Bitten on hand by rabbit

5. Miss F. L'H., female, age unknown; Grimshaw  
Hospitalized—July 31 to Aug. 16  
Agglutination titer—1-3,200, Sept. 21, 1940  
Contact—No known contact with rabbits.  
Possibility of having eaten chicken or some animal which might have ingested infected rabbits  
Result—Recovered

Remarks—No known contact with rabbits.  
Very sore throat and massive glands in neck.

6. Miss N.S., female, age unknown; Vegreville  
Hospitalized—Oct. 10 to Nov. 15  
Agglutination titer—1-3,200, Oct. 26, 1940  
Contact—Rabbits  
Result—Recovered



## 1941

1. Mrs. H.LaR., female, age 34; Prairie Echo  
Hospitalized—July 8 to Aug. 4  
Agglutination titer—1-400, July 10, 1941  
Contact—Rabbits  
Result—Recovered  
Remarks—General malaise, fever, headache  
and symptoms of basal pleurisy—right  
base
2. Miss L., female, age 17; Prairie Echo  
Hospitalized—Aug. 3 to Aug. 30  
Agglutination titer—1-1,600, Aug. 5, 1941  
Contact—Rabbit  
Result—Recovered  
Remarks—General malaise, headache, and  
pyrexia
3. W.B., male, age unknown; Notikiwin  
Hospitalized—Aug. 6 to Oct. 17  
Agglutination titer—1-800, Aug. 13, 1941  
Contact—Rabbits  
Result—Recovered.  
Remarks—Caught rabbits, skinned and fed  
them to pigs  
Re-hospitalized—Oct. 18 to Nov. 19  
Agglutination titer—1-400, Oct. 20, 1941  
Contact—Rabbits  
Result—Recovered  
Remarks—Sputum injected into guinea pig  
October 20, failed to infect
4. J.W.G., male, age unknown; Macleod  
Hospitalized—Sept. 10 to Dec. 20  
Agglutination titer—1-12,800, Sept. 29, 1941  
Contact—Rabbits  
Result—Recovered  
Remarks—Skinning rabbits to feed dogs
5. T.S., male, age 62; Pibroch  
Hospitalized—Nov. 22 to Dec. 17  
Agglutination titer—1- 800—Nov. 25  
1-51,600—Dec. 15  
Contact—Unknown  
Result—Recovered  
Remarks—Final diagnosis was pleurisy.  
Sputum injected into guinea pig Nov. 29  
produced death of the pig with typical  
lesions of *Pasteurella tularensis*

## 1942

1. M.L., male, age 49; Whitla (Seven Person's  
Coulee)  
Hospitalized—April 30 to May 22  
Agglutination titer—1-400—May 26  
1-400—May 30  
Contacts—Tick bite and infected sheep  
Result—Recovered  
Remarks—Pleural fluid injected in guinea  
pig on Aug. 4 and *P. tularensis* isolated.

This man suffered tick bites and also  
handled *P. tularensis* infected sheep

2. E.A., male, age 58; Grimshaw  
Hospitalized—June 15 to July 11  
Agglutination titer—negative—June 15  
1- 200—June 24  
1-3,200—July 4  
Contact—Rabbits  
Result—Recovered  
Remarks—Guinea pig inoculated with pleu-  
ral fluid on July 4 developed typical  
lesions of *P. tularensis*
3. N.P., male, age 14; Lac la Biche  
Hospitalization—(no)  
Agglutination titer—negative—July 9  
Contact—Rabbits  
Result—Recovered  
Remarks—Abscesses in both axillae  
Re-hospitalized—Sept. 3 to Sept. 16  
Agglutination titer—1-400, Sept. 8, 1942  
Contact—Rabbits  
Result—Recovered  
Remarks—Handling rabbits
4. H.M., male, age unknown; Radway  
Hospitalized—Aug. 24 to Aug. 29  
Contact—Ground squirrels and rabbits  
Results—Recovered  
Remarks—Ulcer on toe and abscess on  
thigh, guinea pig inoculated Aug. 28, died  
Sept. 2, *P. tularensis* isolated  
Re-hospitalized—Sept. 7 to Sept. 11  
Agglutination titer—1-6,400, Sept. 8, 1942  
Contact—Ground squirrels and rabbits  
Result—Recovered  
Remarks—(same as above)
5. J.W., male, age 59; Anton Lake  
Hospitalized—Sept. 24 to Oct. 11  
Agglutination titer—1- 3,200—Oct. 3  
1-12,800—Oct. 7  
Contact—Unknown  
Result—Died, Oct. 11, 1942  
Remarks—M2878/42 Sputum collected on  
Oct. 8 inoculated into guinea pig Oct. 8,  
1942, which showed typical lesions of  
*Past. tularensis*  
M2906/42 Citrated blood collected Oct. 9,  
1942, and inoculated into guinea pig on  
Oct. 10, 1942; this guinea pig was killed  
when apparently ill on Oct. 15, 1942. No  
gross or microscopic lesions of tularemia  
were found. Material from the liver of  
this guinea pig was inoculated into a  
second guinea pig which died on Oct. 25  
and showed typical lesions of tularemia  
in spleen, glands, and liver  
P.M./40/42 Autopsy Oct. 11, 1942. Speci-

mens from pleural fluid, spleen, spleen abscess, lung and abscess in axilla when inoculated on Oct. 14, 1942, into five guinea pigs respectively caused *Past. tularensis* infection. All showed typical lesions in 4 to 7 days. Material from liver failed to cause infection. Culture of *Past. tularensis* was obtained from guinea pig inoculated with pleural fluid. Cultures made from pleural fluid, spleen, spleen abscess, liver, abscess in axilla were all negative on blood agar and cystine agar. Culture from left lung; 1. Non-hemolytic streptococci. 2. Freidlander's bacillus. 3. *Staphylococcus pyogenes aureus* -

6. E.B., male, age 11; Ft. Assiniboine  
Hospitalized—Oct. 20 to Nov. 1  
Agglutination titer—1-400, Dec. 1, 1942  
Contact—Rabbits  
Result—Recovered  
Remarks—None

## 1943

1. M.K., male, age 36; Edmonton  
Hospitalized—May 28 to July 10  
Agglutination titer—negative—June 2  
1-1,600—June 10, 1943  
Contact—Scratch on finger from pig's tooth  
while working at packing plant  
Result—Recovered  
Remarks—Pleural fluid inoculated into  
guinea pig on June 15. Lesions in  
guinea pig typical of *Past. tularensis*.  
(Reported by Bell<sup>1</sup>)
2. G.O., male, age 40; Cold Lake  
Hospitalized—July 14 to July 24  
Agglutination titer—Negative—July 7  
1-100—July 12  
1-800—July 14  
Contact—Mink bite on little finger of left  
hand on June 22. Cat bite at same site  
on June 28.  
Result—Died, July 24, 1943  
Remarks—Thirty-six hours after the cat  
bite, patient became dizzy, ill and  
feverish. Guinea pig inoculated on July  
28 with material collected at post-mortem  
from spleen. Lesion in the guinea pig  
typical of *Past. tularensis*

## 1944

1. G.H., male, age 51; Barrhead  
Hospitalized 5 weeks, February-March  
Agglutination titer—1-200—Mar. 22  
1-100—Oct. 26  
Contact—Cut finger while skinning a skunk  
Result—Recovered

Remarks—Clinical diagnosis glandular type  
of tularemia. Lost 40 lbs. in 5 weeks in  
hospital

Treatment—Drainage of lymph sulfathia-  
zole

2. F.S., male, age 14; Lake Isle  
Hospitalized—June 10 to Aug. 23  
Agglutination titer—1-100—June 17  
1-1,600—June 22  
1-3,200—July 12

Contact—Rabbits

Result—Died, August 23, 1944

Remarks—Primary lesion in conjunctival  
sac of right eye. On June 15, 1944, guinea  
pig M3701/44 inoculated with material  
from right eye. The pig died in 6 days  
and showed typical lesions of *Past. tula-*  
*rensis* in liver, spleen and lymph nodes.

M3810/44 . . . June 19, 1944. Cerebral  
spinal fluid yielded pure culture of *Past.*  
*tularensis*. Two guinea pigs inoculated  
on June 19 were killed on June 23 when  
very ill; both showed typical lesions of  
*Past. tularensis*, in spleen, liver and lymph  
nodes.

M4370/44 . . . July 19, 1944. Guinea pig  
inoculated with cerebral spinal fluid—  
negative.

P.M. 25/44 . . . August 23, 1944. Guinea  
pigs inoculated from autopsy material col-  
lected from pleura, heart blood, and brain  
were all healthy at the end of 10 days  
and were negative for *Past. tularensis*  
infection. The pig inoculated with ma-  
terial from the spleen died in 5 days with  
typical lesions of *Past. tularensis*. Cul-  
tures from lung tissue and pleura yielded  
hemolytic streptococci.

3. Mrs. A.D., female, age unknown; Nakamun  
Hospitalized—June 22 to July 21  
Agglutination titer—1-400, June 23, 1944  
Contact—Rabbit through cut on finger  
Result—Recovered

Remarks—Guinea pig inoculated June 24  
with pus from axilla and thumb, killed  
when moribund June 28 and showed  
typical lesions of *Past. tularensis*

## GROUP II

## Probable Cases

Cases diagnosed as tularemia in  
which the agglutination tests were  
positive, but in which no adequate,  
detailed clinical history nor evidence of

TABLE 4  
Probable Cases by Years

Year	Month	Name	Sex	Age	Location	Agglutination Titer	Contact	Result
1941	September	L.J.	M	?	Athabasca	1-3,200	Unknown	Recovered
	November	H.L.	M	44	Lac la Biche	1- 800	Unknown	Recovered
	November	D.F.	M	?	Berwyn	1-1,600	Unknown	Recovered
1942	September	R.V.	M	?	Grassland	1- 400	Unknown	Recovered
1944	May	G.L.	M	22	Mulhurst	1- 400	Unknown	Recovered

contact with a likely source of infection by *P. tularensis* are available.

Five cases in this category have been reported since 1941. These cases are listed in Table 5.

TABLE 5  
Summary of Cases

#### 1941

1. L.J., male, age unknown; Athabasca  
Not hospitalized  
Agglutination titer—1-3,200, Sept. 3  
Contact—Not known  
Result—Recovered  
Remarks—The blood serum of this patient also agglutinated *B. abortus* 1-3,200. The attending physician regarded this as a case of tularemia

2. H.L., male, age 44; Lac la Biche  
Hospitalized—Oct. 18 to Nov. 7  
Agglutination titer—1-800, Oct. 24  
Contact—Not known  
Result—Recovered  
Remarks—Had suppurative axillary adenitis on admission

3. D.F., male, age unknown; Berwyn  
Not hospitalized  
Agglutination titer—1-1,600, Nov. 22  
Contact—Not known  
Result—Recovered  
Remarks—Diagnosed as tularemia

#### 1942

1. R.V., male, age unknown; Grassland  
Hospitalized—No  
Agglutination titer—1-400, Sept. 3  
Contact—Not known

Result—Recovered

Remarks—None

#### 1944

1. G.L., male, age 22; Mulhurst

Not hospitalized

Agglutination titer—1-200, May 25

1-400, May 28

1-400, May 29

1-400 June 7

Contact—Handled muskrats but no history of bites

Result—Recovered

Remarks—No evidence of ulcer. Possible glandular type of tularemia with entrance of organisms through the skin.

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#### REFERENCES

1. Bell, I. R. A Case of Tularemia of Unusual Origin. *Canad. M. A. J.*, 50, 6:555-556, 1945.
2. Bow, M. R., and Brown, J. H. Tularemia in the "Seven Person's Coulee," Alberta. *Canad. Pub. Health J.*, Sept., 1943.
3. Brown, J. H. Tularemia in Southern Alberta. *Canad. J. Med. Tech.*, 5, 2:55-57, 1943.
4. Gwatkin, R., Painter, R. H., and Moynihan, I. W. Tularemia in Sheep. *Canad. J. Comp. Med.*, June, 1942.
5. Shaw, R. M., and Jamieson, H. C. Tularemia, with Report of a Case. *Canad. M. A. J.*, 26, 3: 305-307, 1932.
6. Wright, E. K. Two Cases of Tularemia. *Canad. M. A. J.*, 33, 3:309-310, 1935.

# Wartime Changes in the Age Distribution of Females Infected with Syphilis

Their Effects on Epidemiologic Procedures and Program Planning

J. R. HELLER, JR., M.D.

*Medical Director, Chief, Division of Venereal Diseases, U. S. Public Health Service, Bethesda, Md.*

SINCE 1940 there has been much speculation concerning possible changes in the age at which new infections of venereal disease occur. It has been the general impression that the teen age group is forming an increasing proportion of the problem. This point has been brought out on a number of occasions in addresses on social problems and police and welfare work,<sup>1-4</sup> usually based on conclusions drawn from personal experience without statistical analysis. Several more objective studies have been made<sup>5,6</sup> in which such a trend toward the teen ages has been deduced from the fact that a lower median age of infection can be demonstrated in specific areas studied. Beyond these studies little statistical evidence has been presented to show either the occurrence or non-occurrence of a shift in the age at which infections occur.

By means of the services of the regional and state tabulating units throughout the United States, it has been possible to obtain a large body of data tabulated by single years of age and by race and sex concerning patients admitted to public clinics for early syphilis. It is the purpose of the present study to analyze these data with respect to any changes which may have oc-

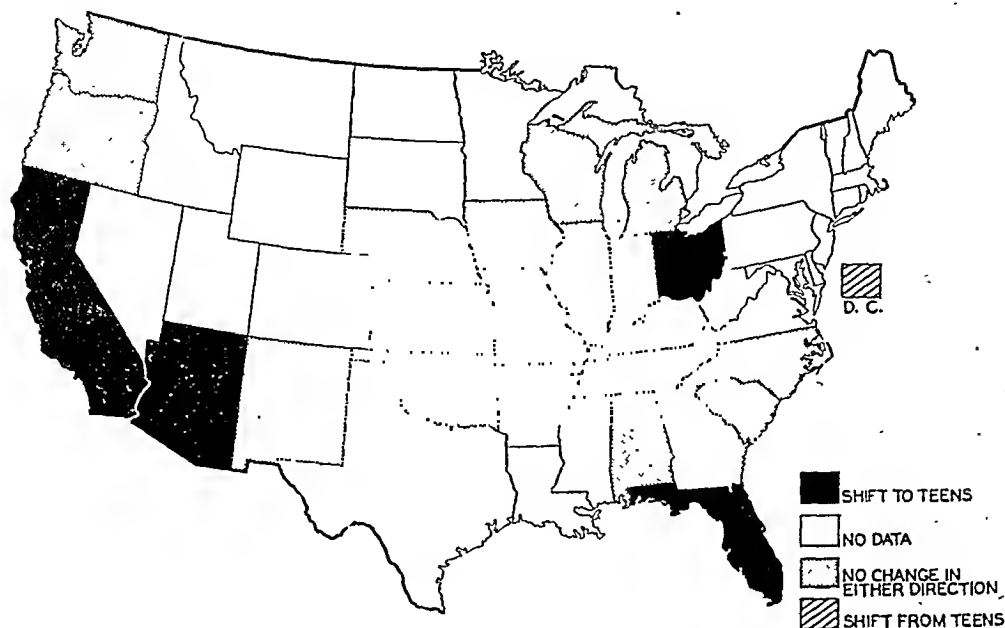
curred in the age at which syphilis is acquired.

Data were available covering the years 1941 through 1944 for the following states: Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa, Missouri, Nebraska, Kansas, North Carolina, South Carolina, Florida, Alabama, Oklahoma, New Mexico, Arizona, Washington, Oregon, and California, and for the cities St. Louis, Chicago, New York, and the District of Columbia.

The analysis was limited to females since male admissions to public clinics have been directly affected to such a large extent by the changing Selective Service Regulations.

The usual method of analysis of age trends, namely the investigation of differences between median ages, was not used since a change in age distribution is reflected in the median only when such a change occurs between age years higher than and lower than the median. For instance, a shift from the early twenties in one year to the teens in the next year would not be reflected in the median if this average happened to fall in the middle twenties for both years. Instead it was decided the data should be considered as a whole, and the per cent which the admissions at

CHART 1—Changes in Age Distribution of White Females Infected with Syphilis Admitted to Public Clinics, 1941–1942



each year of age was of the total admissions was compared from one year to the next. Chi square tests were calculated for the paired individual years of age to test the significance of the observed changes.\*

Charts 1 through 6 show for each state the changes that have occurred from 1941 to 1944 in the age distribution of females acquiring syphilis.

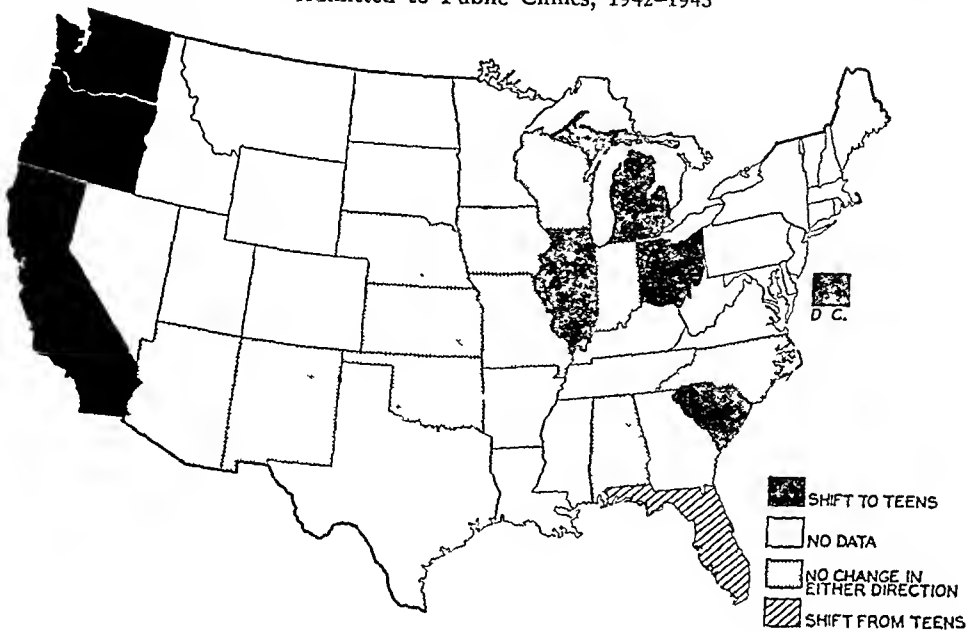
The study reveals that a shift into the teen ages has by no means been nation-wide; nor has it been constant from one year to another. Furthermore, the areas affected have not been the same for whites and Negroes. Many states show no shift of any kind, and some states show a shift away from the teens. Among the white females, California was the only state which exhibited an increasing tendency toward teen age infections through the whole study period. On the other hand, Florida shifted to the teens from 1941 to 1942; shifted back to the older ages

between 1942 and 1943, and showed no change from 1943 to 1944. Among Negro females, Florida and South Carolina showed a constant trend toward the teen ages; whereas Missouri was different in every period. Certainly for both races, fewer states experienced a shift to the teens than experienced no shift or a shift to the older ages.

Among the few large cities studied, there was also no particular consistency in the results obtained. No change of any kind was noted in St. Louis in any year for either race. In the District of Columbia among white females, there was a shift to the older ages from 1941 to 1942, to the teens from 1942 to 1943, with no change occurring between 1943 and 1944. Among colored females, on the other hand, there was a shift to the teens in the first and last paired years with no change shown between 1942 and 1943. No change occurred among white females in New York City, but there was a shift to the teens among colored females from 1942 to 1943. Among white females in Chicago, no change was noted from 1942 to 1943

\* The method of analysis is described on page 510 of this issue.

CHART 2—Changes in Age Distribution of White Females Infected with Syphilis Admitted to Public Clinics, 1942–1943



or from 1943 to 1944. There was a significant difference between 1941 and 1942 but no particular pattern could be found. There was a significant shift to the teens between 1941 and 1942 and between 1942 and 1943 among colored females in Chicago; but

they shifted back again to the older years significantly in 1943 and 1944.

The sample on which the foregoing analysis was based is fairly representative of the country as a whole; including large parts of the midwest, far west, and southwest, and four large cities. When

CHART 3—Changes in Age Distribution of White Females Infected with Syphilis Admitted to Public Clinics, 1943–1944

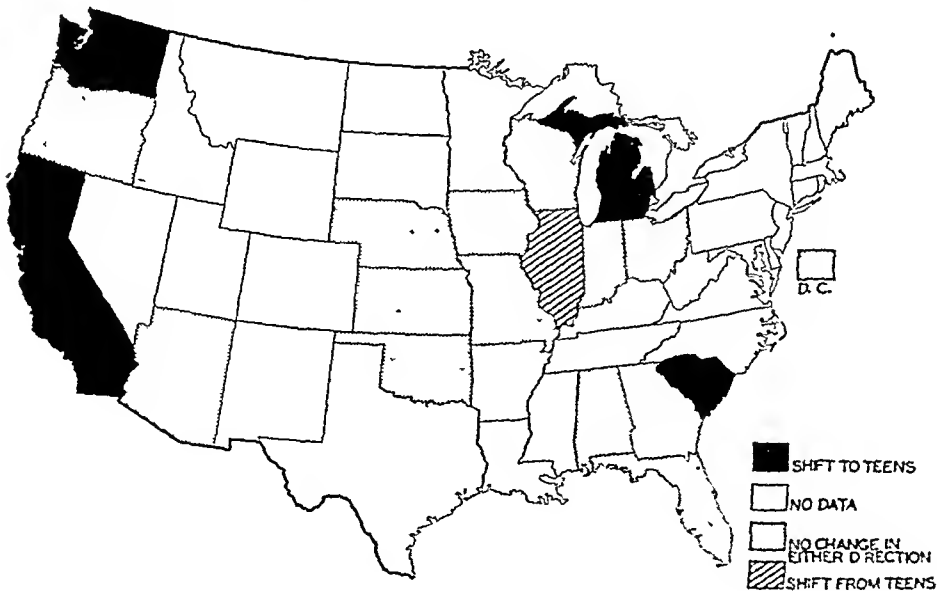
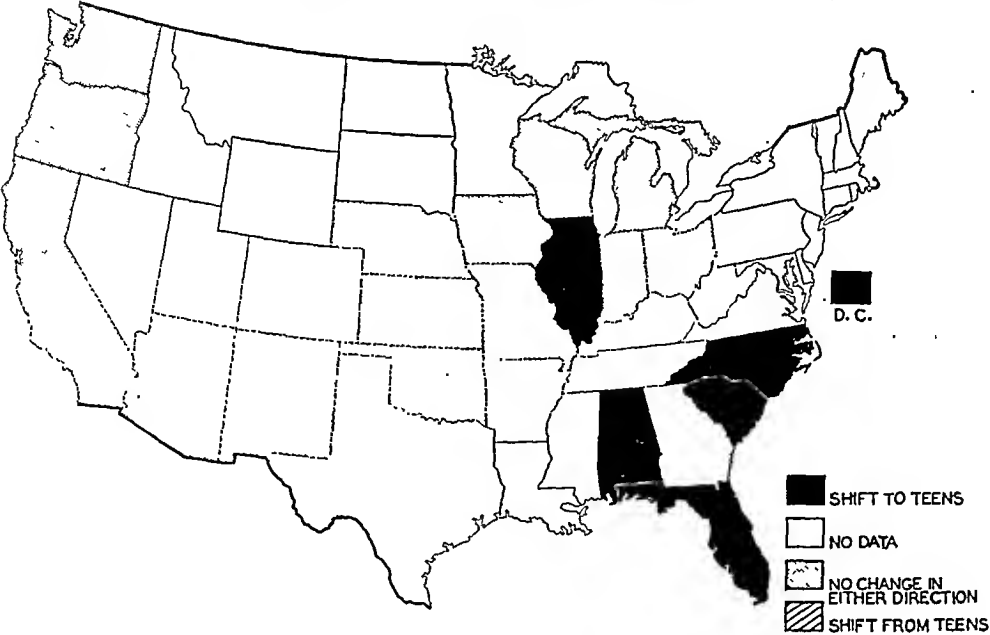


CHART 4—Changes in Age Distribution of Negro Females Infected with Syphilis Admitted to Public Clinics, 1941–1942



it was found that the changes taking place varied widely from one place to another, a search was made for factors which might be possible causes of this disparity.

The two most obvious factors operating to change the populations of vari-

ous areas of the country during the period under consideration were: (1) the induction of large numbers of young men into the armed forces and their mobilization at various places for training and embarkation, and (2) the concurrent concentration of civilian

CHART 5—Changes in Age Distribution of Negro Females Infected with Syphilis Admitted to Public Clinics, 1942–1943

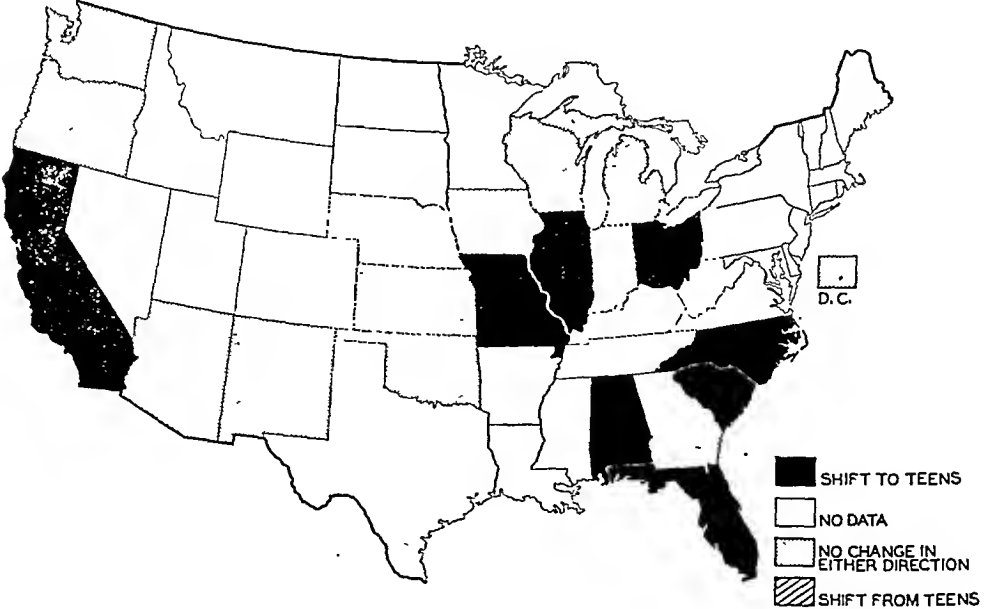
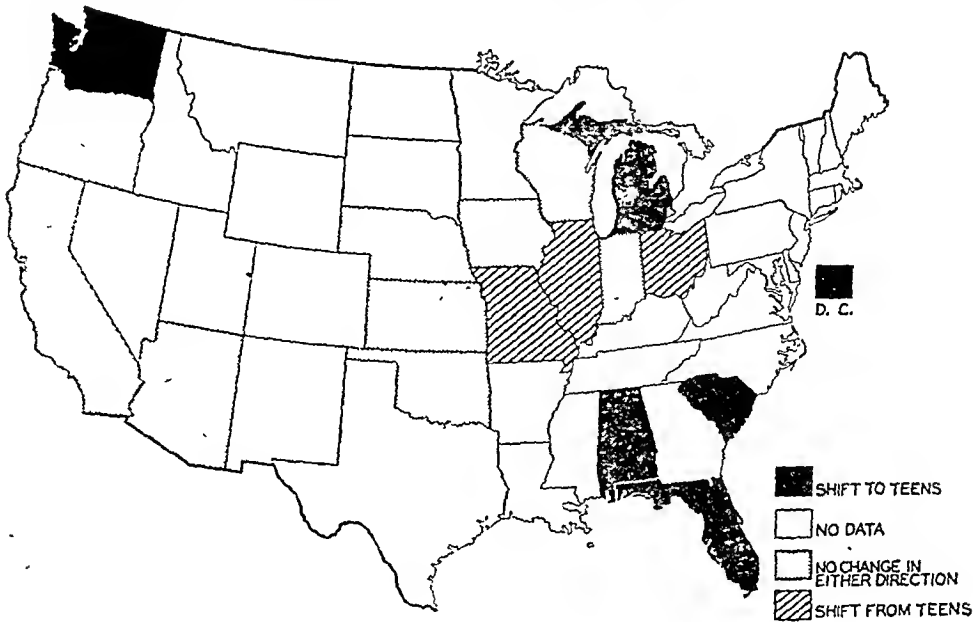


CHART 6—Changes in Age Distribution of Negro Females Infected with Syphilis Admitted to Public Clinics, 1943–1944



population where war industries were being developed. Both of these changes, of course, led to a corresponding decrease in population in non-strategic areas.

Military movements did not change the populations of individual states to any appreciable degree until the period 1942–1943.<sup>7, 8</sup> By 1943, the peak year of concentration in the United States, military personnel comprised over 5 per cent of the population in 12 of the 20 states included in this study. This minimum proportion takes on added significance when it is considered that it included persons in high venereal disease incidence age groups living in an unstable social environment. After 1943, with the shipment of troops abroad, the military population declined. By 1944, military population constituted 4.5 per cent of the whole population as compared to the 5.2 per cent in 1943.

Since 1940 there has been a movement of civilians toward centers of industry.<sup>7, 8</sup> Estimated civilian population figures as of November, 1943, showed that 82 of the 137 metropolitan

districts of the United States increased by 10.4 per cent while the remaining 55 decreased by 5.6 per cent.<sup>8</sup> Due to the fact that many men had been removed from civilian life, a great proportion of this increasing concentration at war industry points was made up of women. There was an 11 per cent increase in female population in urban areas from April, 1940, to July, 1944.<sup>8</sup> The number of women employed in the United States rose from approximately 12 million in December, 1941, to 16½ million, in March, 1944.<sup>9</sup> Furthermore, 29 per cent of women employed since December, 1941, have been under 20 years of age as compared with 3 per cent of those who were employed in March, 1941, and December, 1941.<sup>9</sup> Therefore, since women have played an increasingly important rôle in industry during the four years under consideration, and have been employed at an earlier age than formerly, it is reasonable to believe that a large number of teen age girls were included in the labor movements.

Charts 7 and 8 show the above changes in civilian and military population graphically, in association with



CHART 7—Age Shifts Among White Females

PERCENTAGE CHANGE IN MALE POPULATION,  
15-44 YEARS (BASED ON 1940 ENUM. POPULATION)  
DUE TO MOVEMENT OF MILITARY FORCES.

PERCENTAGE OF CHANGE IN TOTAL  
CIVILIAN POPULATION.

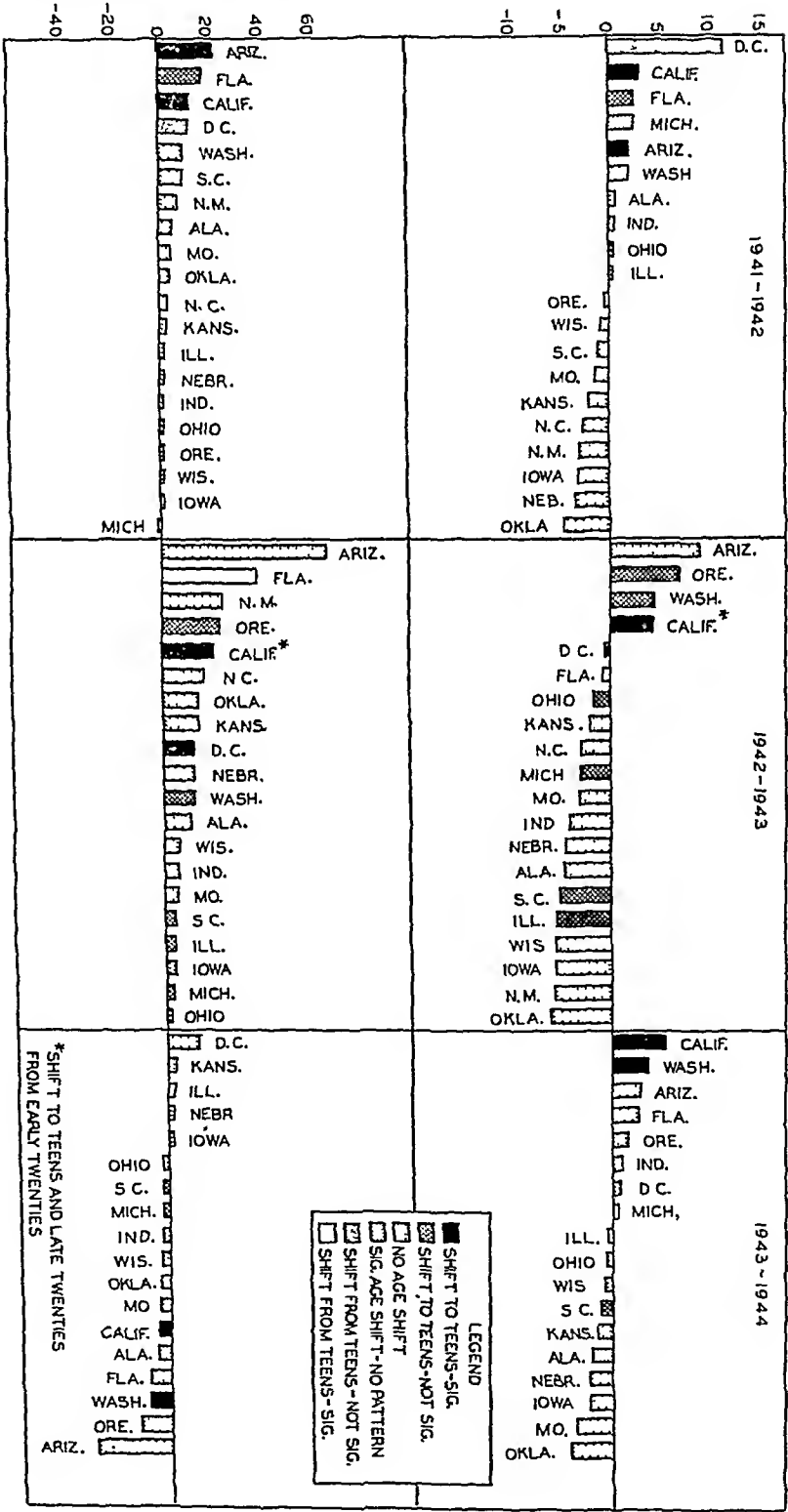
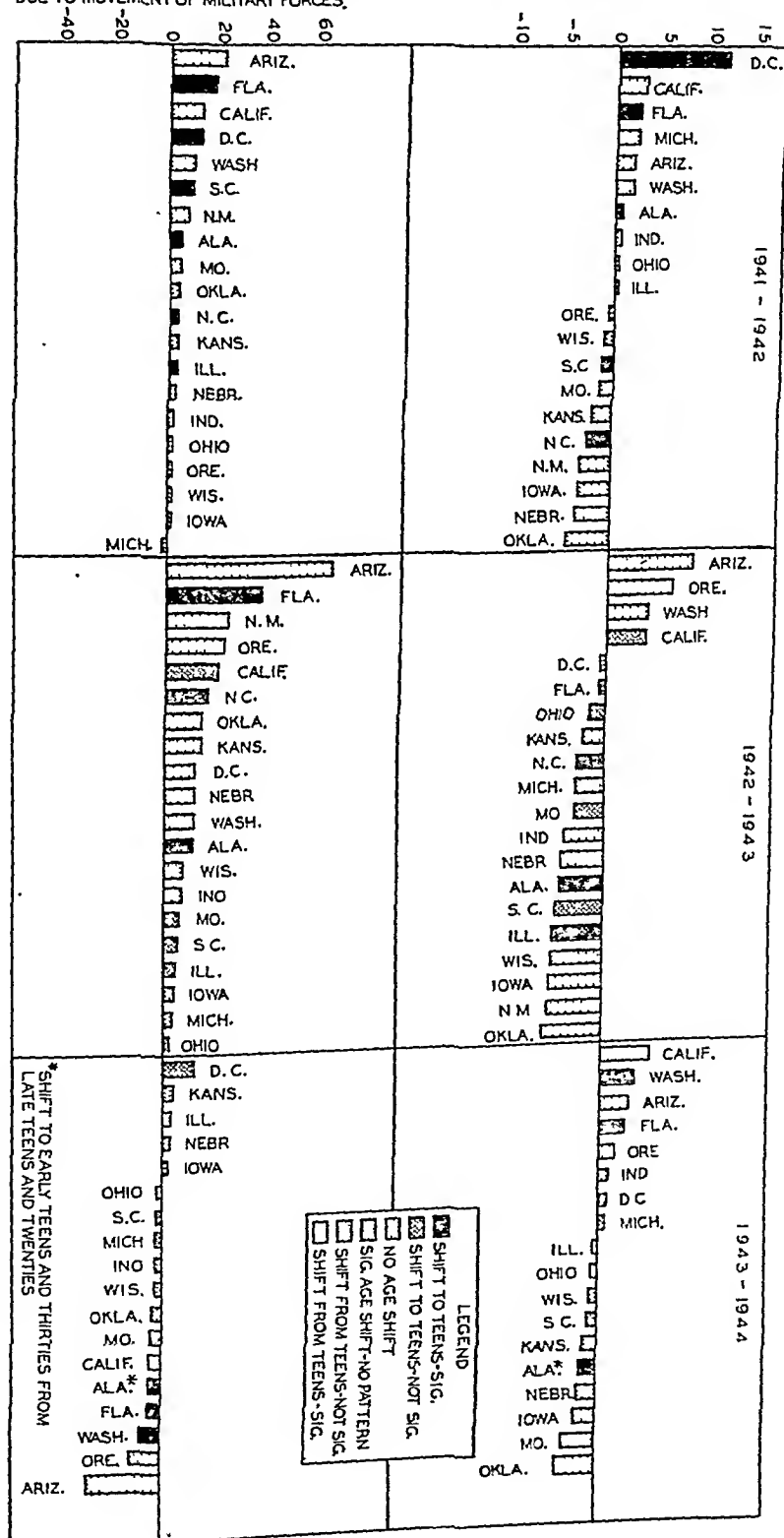


CHART 8—Age Shifts Among Negro Females

PERCENTAGE CHANGE IN MALE POPULATION,  
15-44 YEARS (BASED ON 1940 ENUM. POPULATION)  
DUE TO MOVEMENT OF MILITARY FORCES.

PERCENTAGE OF CHANGE IN TOTAL  
CIVILIAN POPULATION.



the changes in age distribution of female infections with syphilis. The patterns for the two races turned out to be entirely different. Chart 7 presents the situation among white females and Chart 8 that among Negro females.

A tendency toward an earlier age of infection among white females seems to be definitely associated with an increasing civilian population. Part of this, of course, may be due to the uncovering of a greater proportion of existing teen age infections by preemployment and other industrial blood testing programs. When the years 1941 and 1942 are compared, every area in which there was a teen age shift showed an appreciable increase in population. It is true that the District of Columbia, with a great civilian increase in population, showed a shift away from the teen ages; this, however, is actually not a contradiction but rather can be considered as confirmatory evidence, since practically all the population increase in the District of Columbia consisted of older individuals. There is little or no industry in Washington, and the lower age limit for government workers is 18.

When 1942 and 1943 are compared, the association is not so clear as in the previous year, but is still noticeable. And, in 1943 and 1944 the relation between the increase in industrial population and early infection with venereal disease becomes much more apparent. In the two areas in which there were significant shifts toward the teen ages, the civilian population increased more than any other area. And the area that showed a significant shift away from the teens experienced a slight decrease in civilian population.

Increasing military populations seem to have little or no tendency to be associated with an increased proportion of teen age infections among white females. There is no doubt that this is in large measure due to the effective

venereal disease control measures carried out by the military authorities in cooperation with civilian agencies. From 1941 to 1942 the teen age shift among whites did occur in those states showing the greatest increase in military population, but these were the states that also showed increased civilian populations.

Furthermore, in 1942 and 1943, no association was found between teen age infections and increasing military population, and in 1943 and 1944, it becomes clearly apparent that the shift is much more closely associated with civilian population increases. In the two areas in which there were significant shifts to the teen ages, the military population decreased, and appreciable increase in military population took place in the one area which showed a significant shift from the teens. These observations become even more significant in the light of the fact that at the end of 1942 the draft was extended to include boys 18 and 19 years of age.

The pattern for the Negroes was not so consistent as that for the whites. In 1941 and 1942 there was a clear association between an increasing military population and teen age shifts, but none between civilian increases in population and such shifts. In 1942 and 1943 there is still an apparent tendency for an earlier age of infection in areas with increasing military population, and still no association with civilian increases. However, in 1943 and 1944, the pattern resembles that of the whites, with increasing civilian population rather than increasing military population being the most noticeable influencing factor.

Actually of course, it is probably true that the Negro pattern is not so very different from that of the white, since most of their industrial movements did not take place until more recent years when the labor shortage became very acute. Most of the Negro industrial population movements did not take

place until 1943, and it is in the comparison of 1943 and 1944 that we find the greatest changes in the age at which syphilis is acquired.

In California for 1942 and 1943, and in Alabama for 1943 and 1944, the age pattern differed from the other areas. They have both been shown on the charts as a shift toward the teens. However, what actually occurred was that there was a shift both toward the teens and toward the older years away from the twenties. In both of these states the explanation might very well be that there are two types of shifting labor, industrial and agricultural.

The public health significance of these data is readily apparent. Throughout the war period it has been more or less accepted as a fact that concentration of military forces in an area constituted the chief venereal disease control problem to be met. The data which have just been presented, however, do not warrant any such assumption. Rather it is the occurrence of unusual industrial activity which represents the graver epidemiologic venereal disease problem. This is understandable when we think of the growing proportion of young immature girls being employed in industry and the almost necessarily transient nature of the present-day industrial portion of our population. Sir William Beveridge has listed as one of the three necessary<sup>10</sup> conditions of full employment the "organized mobility of labour," and the present Congress is considering measures to insure full employment in this country.

It seems indicated that more intelligent program planning is possible from study of the population groups encountered or expected in an area of health jurisdiction. For instance, venereal disease activities should be strengthened wherever an appreciable expansion in industry is anticipated. Furthermore, it might be well for health officers to study the general public

health problems inherent in a transient population which follows changing employment opportunities from one section of the country to another. The removal of the individual from the usual restraining influences of a familiar environment introduces other health hazards in addition to the venereal disease, for example tuberculosis and the nutritional diseases.

The implementation of a complete program which will control these ills depends, of course, on many agencies other than the health departments. Their prevention will lie in good part with welfare and social agencies within the community. The exposure rate rises with the removal of young girls from their homes and from school to overcrowded areas without adequate housing, recreation, and other normal living conditions. The provision of healthful places to live, normal places to play, and opportunities for further education depends on the activities of agencies concerned with the social welfare. To this the health departments must add good epidemiology and treatment of all disease. A well rounded and thoroughly adequate program depends upon the close integration of all these factors.

#### REFERENCES

1. Milliken, Rhoda J. Why Policewomen? *Bull. Massachusetts Soc. Social Hyg.*, 13:5, 1943.
2. Stokes, John A. Discussion. *J.A.M.A.*, 120:882, 1942.
3. Taft, Charles P. Juvenile Delinquency in Its Relation to the War Effort. *J. M. A. Alabama*, 13:93, 1943.
4. Webb, Mary Louise. Delinquency in the Making. *J. Social Hyg.*, 29:502, 1943.
5. Hirsh, Joseph. Boomtown Wins a Battle. *J. Social Hyg.*, 29:583, 1943.
6. Rosenthal, Theodore and Kerchner, George. Trend in Age of Acquiring Venereal Disease in New York City, 1940-1943. *Ven. Dis. Inform.*, 25:361, 1944.
7. Unpublished Civilian and Military Population Data Furnished by Bureau of the Census, Washington, D. C.
8. Population—Spec. Rep. Series P-44, Nos. 3 & 11; Series P-45, No. 2; Series P-S, No. 4. Bureau of the Census, Washington, D. C.
9. Pidgeon, Mary Elizabeth. Changes in Women's Employment During the War. *Spec. Bull. No. 20*. Women's Bureau, Department of Labor, 1944.
10. Beveridge, Sir William H. *Full Employment in a Free Society*. New York, Norton, 1945.

# The Use of $2 \times n$ Chi Square in the Analysis of Change in Age Distributions

PAUL T. BRUYERE, M.D., M.P.H., MARTHA C. BRUYERE,  
AND GERALDINE A. GLEESON

*Division of Venereal Diseases, U. S. Public Health Service, Bethesda, Md.*

RECENTLY the statistical section of the Venereal Disease Division, U.S.P.H.S., was confronted with the problem of determining whether persons under 20 were becoming infected with syphilis more frequently during the war period. There was available a large body of data consisting of tabulations for the years 1941-1944 showing the number of patients with early syphilis admitted to public clinics by age, race, and sex.

Various methods of analyzing the data were considered. Averages, such as the mean, median, or mode, together with their appropriate standard errors, are the statistics most frequently employed for determining changes in frequency distributions and measuring their extent and significance. All of these measures were discarded as unsuitable for the purpose at hand. The mean was not used because (1) it is unduly affected by cases occurring at extremely low and high age levels, (2) it is possible for changes in one part of the distribution to be balanced by changes in another part and thus not be reflected by any change in the mean. The median age, the point above and below which an equal number of cases fall, is the most commonly used average in analyzing data of this kind, because its insensitivity to extreme items makes it preferable to the mean. However, it

and the mode, which is the point at which the frequency is greatest, are basically merely division points in the distribution and do not depend on the values of the individual items. Therefore they quite often do not reflect changes which may be of considerable importance. Furthermore the standard errors associated with them are relatively large and are subject to certain theoretical restrictions which make them of doubtful value for the present purpose. Therefore, the mean, median, and mode were all considered to be inadequate for the statistical analysis of shifts in the age distribution of syphilis.

Instead of using averages, then, it was decided to consider the data as a whole by directly comparing the age distributions from one year to the next. To test significance of changes in these distributions, Chi square tests were set up for each pair of adjacent years. Where small numbers of cases were reported, age-years were combined in order to obtain a frequency of at least 5 in each cell; and in a few instances, it was also necessary to combine states for the same purpose.

The following formula for Chi square in a  $2 \times n$  contingency table was developed in a form which gives the contribution of each pair of frequencies to the total Chi square and which is convenient for machine computation.

TABLE 1

Changes in the Age Distribution of Negro Females with Early Syphilis Admitted to Clinics in the State of Alabama, 1941-1942

Age	Cases Admitted during 1941		Cases Admitted during 1942		Per cent Change in Percentage (1941-1942)	Contribution to $\chi^2$
	Number (f)	Per cent	Number (f')	Per cent		
10-13	22	0.6	16	0.5	-16.7	.76
14	39	1.2	54	1.7	+41.7	2.93
15	79	2.4	108	3.4	+41.7	5.48
16	136	4.1	148	4.6	+12.2	.97
17	185	5.6	244	7.6	+35.7	10.13
18	243	7.3	311	9.7	+32.9	10.68
19	276	8.3	306	9.5	+14.5	2.66
20	299	9.0	263	8.2	-8.9	1.29
21	279	8.4	234	7.3	-13.1	2.63
22	281	8.5	257	8.0	-5.9	.44
23	231	7.0	214	6.7	-4.3	.22
24	209	6.3	187	5.8	-7.9	.62
25	194	5.9	167	5.2	-11.9	1.24
26	131	4.0	116	3.6	-10.0	.49
27	121	3.6	114	3.6	....	.04
28	109	3.3	86	2.7	-18.2	2.02
29	62	1.9	67	2.1	+10.5	.39
30	88	2.7	64	2.0	-25.9	3.06
31	46	1.4	26	0.8	-42.9	4.93
32	50	1.5	52	1.6	+6.7	.13
33	32	1.0	36	1.1	+10.0	.38
34	26	0.8	19	0.6	-25.0	.88
35	25	0.8	14	0.4	-50.0	2.76
36	27	0.8	18	0.6	-25.0	1.52
37	21	0.6	21	0.7	+16.7	.01
38	25	0.8	11	0.3	-62.5	5.00
39	24	0.7	15	0.5	-28.6	1.80
40	12	0.4	10	0.3	-25.0	.12
41	8	0.2	5	0.2	....	.60
42	10	0.3	8	0.2	-33.3	.16
43-44	10	0.3	7	0.2	-33.3	.44
45-46	7	0.2	4	0.1	-50.0	.72
47-50	9	0.3	9	0.3	....	.01
Total	3,316	100.0	3,211	100.0		65.51

$$p = .508044$$

$$q = .491956$$

$$\frac{1}{pq} = \frac{1}{.249935} = 4.001040$$

$$\frac{p}{q} = 1.632702$$

$$\frac{p}{q} + 2 = 3.032702$$

$$\chi^2 = \sum_j \left[ \frac{f_j^2}{f_j + f'_j} \cdot \frac{1}{pq} + f'_j \frac{p}{q} - f_j \left( \frac{p}{q} + 2 \right) \right] \quad (a)$$

$$= \frac{\sum_j \left( \frac{f_j^2}{f_j + f'_j} \right)}{pq} - \frac{F^2}{F + F'} \quad \dots (b)$$

Where  $f_j$  = cases  $j$  years of age reported during one year.

$f'_j$  = cases  $j$  years of age reported during the succeeding year.

$$F = \sum_j f_j$$

$$F' = \sum_j f'_j$$

$$p = \frac{F}{F + F'}$$

$$q = \frac{F'}{F + F'} \text{ or } 1 - p$$

Formula (a) was used to obtain the

contribution of each item to the total Chi square. Formula (b) is equivalent to the familiar one developed by Brandt and Snedecor.<sup>1</sup> It was used to compute the total Chi square directly, the summation of the individual results obtained by the use of formula (a) serving as a check on the total Chi square from formula (b). The computations involve little more labor than is required for the means and standard deviations, since the individual contributions generally need be determined only when the total Chi square is found to be significant. If only the total is desired, the

$$\frac{f_j^2}{f_j + f'_j}$$

can be cumulated in the machine, and a convenient check can be obtained by repeating the operation with  $f_j$  and  $f'_j$  interchanged. The entire calculation is self-checking if the individual contributions to the total Chi square are determined.

Application of these formulae set up for the Negro females, 1941-1942, in the State of Alabama gave the results shown in Table 1. In analyzing the result of the procedure in this instance, it was determined by entering in the table of  $\chi^2$  with  $(n-1)$  degrees of freedom that the probability of occurrence of a Chi square as large as that found for the total distribution (65.51) was far less than .01, indicating that the age distribution of syphilis incidence in Alabama in 1942 was significantly different from the distribution in 1941. Furthermore, from the contributions of individual years of age to the total Chi square, it was readily seen that there had been significant increases in cases of early syphilis in the ages 14-19 years, with compensating decreases in the remaining age-years. For the same data, both the mean and median ages were lower in 1942 than in 1941, the median dropping from 21.4 to 20.7, and the mean from 23.0 to 22.2. Both of

TABLE 2

*Changes in the Age Distribution of White Females with Early Syphilis Admitted to Clinics in the State of Michigan, 1942-1943*

Age	Cases Admitted during 1942		Cases Admitted during 1943		Per cent Change in Percentage (1942-1943)	Contribution to $\chi^2$
	Number (f)	Per cent.	Number (f')	Per cent		
10-17	12	9.2	11	6.9	-25.0	.46
18-19	13	9.9	23	14.5	+46.5	1.19
20-21	15	11.5	27	17.0	+47.8	1.52
22	7	5.3	7	4.4	-17.0	.13
23	7	5.3	13	8.2	+54.7	.84
24-25	10	7.6	28	17.6	+131.6	5.46
26-28	16	12.2	10	6.3	-48.4	2.81
29-31	15	11.5	11	6.9	-40.0	1.65
32-37	21	16.0	13	8.2	-48.8	3.78
38-41	6	4.6	6	3.8	-17.4	.11
42-50	9	6.9	10	6.3	-8.7	.03
Total	131	100.0	159	100.0		17.98

$$p = .451724$$

$$q = .548276$$

$$\frac{1}{pq} = \frac{1}{.247669} = 4.037647$$

$$\frac{p}{q} = .823899$$

$$\frac{p}{q} + 2 = 2.823899$$

these differences are significant, being in each case greater than 2.575 times the standard error. These statistics, however, give no indication of the specific age-years undergoing changes in incidence.

In other instances the mean and median not only failed to give a complete picture of the situation but yielded results which were actually misleading. For example, among white females in the State of Michigan (Table 2) the median age fell from 25.2 in 1942 to 22.9 in 1943, and the mean age from 27.4 to 25.3. When tested for significance, the probabilities of each of these differences fell between the .01 and .02

limits in a table of relative deviates. However, Chi square tests on the same data proved that no specific teen-age year underwent a significant change, nor did the total Chi square indicate a significant difference between the 2 years.

On the other hand, in some instances, the Chi square test showed that a significant shift to the teens from older age-years had taken place, when both the mean and median failed to show any significant change. An analysis of the data for Negro females in New York City, 1942-1943 given in Table 3 illustrates such a case. While no individual age among the earlier age-years showed a highly significant change, the prob-

TABLE 3

*Changes in the Age Distribution of Negro Females with Early Syphilis Admitted to Clinics in New York City, 1942-1943*

Age	Cases Admitted during 1942		Cases Admitted during 1943		Per cent Change in Percentage (1942-1943)	Contribution to $\chi^2$
	Number (f)	Per cent	Number (f')	Per cent		
10-14	7	0.8	11	0.8	...	.05
15	7	0.8	17	1.3	+62.5	1.51
16	13	1.4	32	2.5	+78.6	2.95
17	31	3.4	68	5.3	+55.9	4.24
18	57	6.2	95	7.3	+17.7	1.01
19	79	8.6	133	10.3	+19.8	1.57
20	84	9.1	118	9.1	....	....*
21	122	13.3	141	10.9	-18.0	2.58
22	114	12.4	143	11.0	-11.3	.86
23	127	13.8	147	11.4	-17.4	2.65
24	81	8.8	91	7.0	-20.5	2.21
25	42	4.6	61	4.7	+2.2	.02
26	24	2.6	45	3.5	+34.6	1.29
27	28	3.0	42	3.2	+6.7	.07
28	15	1.6	36	2.8	+75.0	3.07
29	12	1.3	9	0.7	-46.2	2.11
30	18	2.0	20	1.5	-25.0	.54
31	10	1.1	9	0.7	-36.4	.97
32	10	1.1	20	1.5	+36.4	.83
33-34	5	0.5	23	1.8	+260.0	6.45
35-36	16	1.7	10	0.8	-52.9	4.30
37-39	6	0.7	12	0.9	+28.6	.50
40-43	6	0.7	5	0.4	-42.9	.77
44-50	5	0.5	7	0.5	....	....*
Total	919	100.0	1,295	100.0		40.55

$$p = .415086$$

$$q = .584914$$

$$\frac{1}{pq} = \frac{1}{.242790} = 4.118756$$

$$\frac{p}{q} = .709653$$

$$\frac{p}{q} + 2 = 2.709653$$

\* Less than .005



ability of occurrence of so large a total Chi square fell between .01 and .02, indicating that a significant change had taken place in the entire distribution. The mean age in this group was 22.7 in 1942 and 22.4 in 1943; the median age was 21.5 in 1942 and 21.2 in 1943. These differences were not significant, the probability of the occurrence of each being well above .10.

These few examples serve to illustrate some of the advantages of the  $2 \times n$  Chi square in the analysis of changes in frequency distribution.\* As far as we have been able to determine, it has

not been extensively used for this purpose. It is, however, an excellent tool for such analyses, since it is sensitive to changes at any point in the distribution and is capable of indicating the points showing the greatest changes. For this reason it is more flexible and more productive of information than the mean or the median.

#### REFERENCE

1. Fisher, R. A. *Statistical Methods for Research Workers*. Edinburgh: Oliver and Boyd, 5th ed., 1934, p. 90.

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\* A study based on this method of analysis is reported by J. R. Heller on page 501 of this journal.

# Report of the Chairman of the Executive Board of the American Public Health Association to the Governing Council—1945

ONE may draw some significant conclusions from a review of Association affairs covering the fifteen months that have elapsed since the Second War-time Conference in New York City in October, 1944, to the end of 1945. An atmosphere has been created in this 74 year old professional society which attracts new projects eminently suitable for development under its sponsorship. It is an atmosphere, further, which attracts the professionally competent, so that any project is assured of advancement under favorable auspices. It is an atmosphere which not only attracts but which holds both projects and persons until the job is done. The qualities of courage and farsightedness displayed by the Association have created the magnetism which brings into our sphere of influence the dynamic issues with which we have been dealing in 1945.

During this momentous period the world passed from deep preoccupation with war to deep preoccupation with peace. To no group of persons anywhere could the coming of peace mean more professionally and personally than to the world-wide fraternity of public health workers. To this Association it brought challenges at very practical levels, some of which I shall review in this report. Even though the manifold activities of the Association preclude a systematic account of all that has fallen within the purview of the Executive Board, I shall offer no apology for choosing certain matters for special

emphasis on which the Governing Council should be specially informed.

## ACCREDITATION OF SCHOOLS OF PUBLIC HEALTH

The need for the raising of an authoritative voice with regard to facilities for educating and training for the public health professions has long been manifest, but it was never so urgent as in the spring of 1945 when the European war had ended and the war in the Pacific was coming to its conclusion. Greatly increased demands for public health training were foreseen through the removal of financial barriers in the United States by the G. I. Bill of Rights. There was also a proper concern on the part of the federal government to assure to veterans an adequate return on scholarship funds. The Committee on Postwar Training and Recruitment of the U. S. Public Health Service and the Association of Schools of Public Health turned to the Association and invited it to undertake a program of accreditation of institutions considered competent to offer courses for postgraduate training in public health. The Committee on Professional Education, under the Chairmanship of Dr. William P. Shepard, has had this subject under consideration since 1942 and, with the approval of the Executive Board, it accepted the task.

An editorial in the September issue of the *American Journal of Public Health* described the situation which has ex-

isted in North America, outlined the proposal to the committee and the plan of procedure adopted. The Commonwealth Fund has generously assured the financing for three years. With Professor C.-E. A. Winslow as Consultant on Criteria and Assistant Consultants especially engaged for the visit to each institution, this project advanced during the year to a point where institutions accredited by the Association to give the Master of Public Health degree (Diploma in Public Health in Canada) could be announced early in 1946, in our official *Journal* and elsewhere, together with the criteria governing accreditation. The next move is in the direction of accrediting institutions to give the Doctor of Public Health degree and thereafter to extend the program to consideration of other graduate training and perhaps to field training centers. If there be any fear that the attainment of these objectives will result in a pattern of conformity which will leave no room for experimentation and imagination in our schools of public health, it may be dispelled by the philosophy of the Committee on Professional Education so well expressed by its Chairman: "Just as the committee recognizes that requirements for professional qualifications of public health workers must be fluid, so it recognizes that teaching in schools of public health must remain dynamic and free from the confining influences of rigidly prescribed curricula or standards. Hence the committee is resolved that its accreditation shall be an incentive to experimentation and diversity rather than an influence for forcing education for the public health professions into a uniform mold. It will suggest only very broad principles both of organization and of curriculum, but will insist on a set of minimum criteria representing the best consensus of opinion of both teachers and practitioners."

The accreditation program is an ex-

ample of the kind of responsibility which is entrusted to the Association and which it is equipped to assume and discharge with distinction.

#### VOCATIONAL COUNSELING AND GUIDANCE PROGRAM

When the war ended, more than 1,000 members of the Association were in one or another of the military services. With many the future was as secure as futures can be in this uncertain world. They would return to the positions they had held previously in public health. With others too young perhaps to be established before they put on the uniform, or with inclinations altered as a result of new influences, there appeared to be opportunity for expanded usefulness through the Association's Employment Service if it could be strengthened by full-time trained personnel in the Central Office. While the Executive Board and the Committee on Professional Education were considering how this could be done, the U. S. Public Health Service, faced with hundreds of inquiries from returning veterans regarding post-war opportunities in public health, saw the advantages of single agency handling of such matters, and was receptive to a coöperative arrangement with the Association to make it possible. As a result, a Vocational Counseling and Guidance Service has been established in the Association for public health workers and employers. With federal funds well trained consultants have been attached to the Central Office staff to supply information and advice. The staff supplies not merely information as to existing jobs, but as to qualifications and training opportunities for the various public health specialties. The Executive Secretary continues, as formerly, to give personal attention to employment and counseling service. In this undertaking there is continuous and close coöperation with the Public Health Service

through the Surgeon General's Committee on Postwar Training and Recruitment. While the first emphasis was upon the veteran, it was soon apparent that the large number of vacancies could not be filled with qualified personnel from this category alone, and the base of operation widened spontaneously to include non-veterans as well.

On December 31, 1945, the Employment Register listed 150 openings offered by 75 employers and 105 trained candidates for positions. Intensive efforts are being carried forward to make known the availability of the service and to stimulate state and city health departments to make full use of it in building up depleted staffs.

An activity related to the Counseling Service is the brochure, *Employment Opportunities in Public Health*, published by the Committee on Professional Education at the request of the War Manpower Commission. Of the 15,000 copies printed, 13,000 were made available to the U. S. Public Health Service and to the War Manpower Commission for use in Separation Centers. Another pamphlet, *Careers in Public Health*, is in preparation, also under the supervision of Dr. Shepard's committee, designed for the use of vocational counsellors in high schools and colleges. It will be published and distributed before the end of the present academic year.

#### NEW ACTIVITIES OF THE SUBCOMMITTEE ON MEDICAL CARE

When the Governing Council last met, on October 2 and 4, 1944, the most important item on the agenda was a Report on Medical Care from the Committee on Administrative Practice. The report was approved by a large majority and has since been widely distributed as an official declaration of the Association, affirming the Association's belief that a program of medical care designed

to reach all the people is essential and its conviction that an overall program can be realized within ten years. The declaration proposed a simultaneous attack on five fronts—(1) development of administrative organization to provide services; (2) facilities for distribution of costs; (3) advancing the training of personnel; (4) promoting construction of facilities; and (5) the improvement of knowledge. From this action of the Governing Council have stemmed two important developments just now arrived at a stage where they can be announced, after months of preliminary negotiation and planning.

The first will implement the work of the Subcommittee on Medical Care directly. The subcommittee, through the generosity of the Rockefeller Foundation, becomes the recipient of a financial grant to establish an office with full-time technical staff, and it will turn its attention immediately to a review of proposed federal and state health legislation, recommending to the Association the stand it should take with regard to such legislation in the light of its declared principles. The subcommittee will provide information on medical care problems to the public health professions, and will attempt to stimulate leadership in the formulation and administration of medical care programs. Later on, the subcommittee hopes to formulate in detail the specifications at the technical level of good medical care programs and to describe the steps by which such programs can be established, including organization, financing, and administration. The subcommittee's initial tasks are basic to a complete understanding of the problem and to its ultimate solution.

The second development will aid in the achievement of the objectives of the Association's declaration through focus on one of them—that of the extension of knowledge. The Executive Board has approved a plan whereby the

Albert B. and Mary Lasker Foundation will annually provide a number of awards, to be given by the Association, designed to shorten the time between a scientific discovery in the field of medicine or public health and its general use in practice, particularly in a preventive way. Dr. George Baehr has accepted the chairmanship of a committee now in process of formation to chart the activities, within the interests of the Association, which these awards are planned to stimulate. First priority will be given to research with relation to the diseases which are the leading causes of death. There is also opportunity to recognize administrative achievement in the prevention and treatment of these diseases. The need for increased information among the public health professions about the causes, treatment, effective care, and prevention of these most serious diseases is obvious. The Board believes that the awards will be of value in stimulating professional effort in all these areas and in contributing to public knowledge concerning them. The contributions of health agencies or of individuals are of equal importance in the aim of the Lasker Awards. It is hoped that one or more of these awards may be conferred for the first time at the 1946 Annual Meeting.

#### CONDUCT OF ASSOCIATION BUSINESS IN THE ABSENCE OF AN ANNUAL MEETING

The year 1945 was the first in the Association's history when no Annual Meeting was held. The end of the war did not clear hotel and transportation facilities for convention travel even when Office of Defense Transportation regulations were removed and the Executive Board reluctantly assumed the responsibility of breaking the long tradition. Accepting the fact that an Annual Meeting in 1945 was an impossibility, the Executive Board set up

a procedure for conducting necessary Association business with the Governing Council by mail. With regard to the terms of officers and committee members, it invoked Article IV of the Constitution which provides that "all officers shall serve until their successors are elected and qualified." This has had the effect of holding in office for another year all elected and appointed persons whose terms would otherwise have expired in 1945.

#### PARTICIPATION IN STATE AND REGIONAL MEETINGS

In partial substitution for an Annual Meeting, the Association coöperated in ten state and regional meetings. The successful tour of Western state public health association meetings with a team of speakers organized by the Executive Secretary was repeated for the third wartime spring, and in December a Victory Meeting was held in collaboration with the Public Health Association of New York City. The total attendance at these ten meetings exceeded the attendance at any of our Annual Meetings in the past. Begun as a wartime measure, there are elements of special stimulation and encouragement, particularly to the younger workers who do not have the opportunity to attend a national meeting, that point to the continuation of the traveling team of speakers in the future.

#### THE AMERICAN JOURNAL OF PUBLIC HEALTH

A year without the more than 200 papers and reports supplied by an Annual Meeting has had no effect upon the *Journal*, contrary to expectations. Under the able leadership of the Editor, Professor C.-E. A. Winslow, a series of especially invited historical reviews was initiated. Two have already appeared—"Evaluation of Methods to Control Air-borne Infections," by Dr. James E. Perkins, in September, "Tsutsugamushi

Disease in New Guinea," by Dr. Kenneth F. Maxcy and others in November. "Blood and Blood Derivatives," by Dr. Charles A. Janeway, is scheduled for January, 1946. Others in hand concern the Rh factor, The Public Health Aspects of Birth Control, and Insecticides, respectively. The Sections have stimulated many contributions, and these and the excellent unsolicited manuscripts reaching the Editorial Board because of the *Journal's* reputation as the most authoritative and influential magazine in its field have provided all the material necessary for the 1945 volume.

The *Journal* quietly celebrated its 35th birthday this year with a historical article in the December issue entitled "The Journal Is 35 Years Old." The average circulation of the *Journal* in 1945 was 13,300, exceeding by 811 its best previous record which was made in 1944.

#### SECTION ACTIVITIES

A meeting of Section Secretaries was financed by the Association early in the year to consider how the energies of Section Committees and members might be directed in a year lacking the stimulation of an Annual Meeting. In addition, four of the Section Councils—Engineering, Food and Nutrition, Health Education, and School Health have met for the same purpose. The results have been noteworthy. Section work has gone forward unabated; the deadline, which it was believed the Annual Meeting represented, apparently being only incidental.

The newest Section, that on Dental Health, has undertaken a source book on Public Health Dentistry now being written by a group of some 18 editors, chiefly dentists, but including also experts in health education, medical economics, and public health administration. A contract has already been signed with a commercial publisher for

publication, with arrangement for royalties to the Association.

The Vital Statistics Section has published a directory of vital statisticians including about 900 names, a by-product of which was to bring 50 new members into the Association. It is also sharing with the Epidemiology Section membership on a Subcommittee on Morbidity Registration and Statistics of the Committee on Research and Standards. The lack of widespread morbidity reporting has long made it impossible to evaluate completely the effects of public health service, or indeed to chart accurately the needs. Particularly is this true with the present increasing importance of chronic and deteriorative diseases of an aging population.

From the Laboratory Section has come a second edition of *Diagnostic Procedures and Reagents* and a condensed Spanish edition of the eighth edition of *Standard Methods for the Examination of Dairy Products*. The ninth edition of the latter is in preparation, as is the ninth edition of *Standard Methods for the Examination of Water and Sewage*. Each is scheduled for publication before the next Annual Meeting.

The School Health Section has had an active year. It has served as one of the fourteen agencies coöperating in the publication of *School Health Policies*, a restatement and bringing up to date of current thinking with respect to health service in schools. It has organized a Rural School Health Committee, and committees to study school health legislation and preservice and in-service training of school health personnel.

The Public Health Education Section has developed a wholly new technique of committee work. In an experiment designed to increase member participation in Association and Section activities, and at the same time to

develop "grass roots" interest, its Section work has been carried on through six regional committees, each studying the resources and problems of the area in which the members live. The committees are composed of all the members of the Section in a given area. It is planned that at the Annual Meeting of the Association in 1946, the Section program will be based on this regional organization, which will give an opportunity to exchange diverse experiences and weld them into common objectives, though variously manifested.

#### THE STANDING COMMITTEES

##### *Committee on Professional Education*

We have discussed the Accreditation project and indicated that it resides in the Committee on Professional Education. This alone would be sufficient to engage fully the voluntary efforts of the Chairman and his colleagues, but it is only part of the story. The Merit System Unit, conducted also under the Committee on Professional Education and operating from the Central Office, has made marked progress in 1945. The Unit with the coöperation of the U. S. Public Health Service and the Children's Bureau is now ending the fifth year of its work. During that time it has sold or released a total of 163 examinations for 22 state and 2 city health departments, 54 since April, 1945. There are orders on hand at the moment for another 15 examinations. The Unit now has a stock pile of examination items in eight fields of public health—public health administration, environmental sanitation, public health nursing, public health laboratory service, vital statistics, medical social work, and beginnings have been made in health education and nutrition. This year approximately 22 per cent of the Unit's operating costs were recovered in examination fees, a proportion that will increase in future years because of the constantly accumulating file of items.

Public health nursing examinations have been provided most numerous, the figures being 91 examinations in 21 states. The laboratory field is next with 50 examinations provided for 8 states and one city. Environmental sanitation is third with 30 examinations provided for 7 states and 1 city.

Recent activity of the Merit System has not, however, been limited to meeting the increased demands for examinations. During the past year the program has been expanded to include three new major subject matter areas, namely, medical social work, vital statistics, and health education. At the same time specialized material has been prepared in a number of smaller areas, as, for example, clinical pathology, entomology, physiotherapy, food and drug chemistry, and x-ray technique. The development of these new fields brings to a total of 332 the number of public health persons who have participated in the project either as constructors or reviewers.

One of the most important developments during 1945 has been the statistical evaluation of the examination material. Ten of the 22 states using Merit System Unit examinations have returned data to the Central Office and, with the addition to the staff of a statistician on a half-time basis, maximum use of this information has been made.

The Committee on Professional Education from 1937 to date has prepared reports on educational qualifications for 15 professional categories in public health which the Governing Council has approved. The latest reports—Educational Qualifications of Public Health Dentists and Educational Qualifications of Executives of Voluntary Health Associations were adopted as proposed reports by the committee in October, 1944, were published in the *Journals* of January and May, 1945, respectively, and at the end of the year, through a mail poll, in the absence of the Annual

Meeting, were approved by the Governing Council as recommendations of the Association. Nearly all are currently under revision in conformity with the well established policy of the committee. A report on Nutritionists in Health Agencies, originally adopted in 1941, will soon be before the membership for comment in revised and extended form. It is being published in the January, 1946, *Journal* as a Proposed Report and at the same time in the official Journals of its co-sponsoring agencies, the American Dietetic Association and the American Home Economics Association.

Permission has been granted for translation into Chinese of the reports on Qualifications of Public Health Laboratory Workers and Health Educators, and to the Coordinator of Inter-American Affairs for translation into both Spanish and Portuguese of the report on Health Educators. The circulation of all reports of the Committee on Professional Education, including their publication in the *Journal*, approximates the 200,000 mark. The concerns of the Committee on Professional Education for 1945, therefore, have involved professional qualifications of public health personnel, the promotion, extension, and interpretation of merit system methods for all such personnel, recognition of acceptable training institutions, and recruitment policies that will result in an increasing body of trained and equipped personnel for public health leadership today and tomorrow. The Chairman and the committee are aware that this quartet of activities needs to be supplemented by a fifth, namely a knowledge of and concern for the salary standards current in public health. The committee is committed to a salary study and is planning for it in the coming year.

#### *Committee on Administrative Practice*

The Subcommittees of the Commit-

tee on Administrative Practice, Wilton L. Halverson, M.D., Chairman, in addition to that on Medical Care mentioned earlier, include Local Health Units, Evaluation of Administrative Practices, Accident Prevention, and State and Local Health Administration. Under the supervision of the last named, the field work has gone on without interruption, even with an interval of several months between the resignation in July of Dr. George T. Palmer, Associate Field Director, and the recent appointment of his successor, Roscoe P. Kandle, M.D., M.P.H. From October, 1944, to December, 1945, public health studies have been made in Madison County, Illinois, in San Francisco, in Sacramento, and state studies in Utah, Idaho, and Colorado. This subcommittee also is responsible for enlarging the Reporting Area through the use of the *Evaluation Schedule*, and the results of its work are most encouraging. Of 145 schedules submitted from 18 states in 1945, 47 were from communities participating for the first time. The expansion of *Health Practice Indices*, which shows the range of accomplishments in various fields of community health service, also indicates the spread of the Reporting Area idea. The second edition, published in 1944, contained data concerning 178 communities; the third, published in the fall of 1945, charts the accomplishments of 243.

Under the auspices of the Subcommittee on Local Health Units, Haven Emerson, M.D., Chairman, and published for the Association by the Commonwealth Fund, *Local Health Units for the Nation* appeared in August, and within a month was in its second printing. This is the result of a two year study financed by the Fund. Its recommendations would create 1,197 local health units providing minimum essential health services to all the people at a cost of \$1.00 per capita,



replacing 18,000 local administrative units now in operation and under which 40,000,000 persons are still without basic health protection. There appears to be a real demand for further exploration and promotion of the principles suggested by the subcommittee. Not only have varied national magazines such as the *American Journal of Public Health*, *The American City*, *State Government*, and the *Public Administration Review* solicited articles, but the report has also been reviewed in such journals as that of the American Medical Association, the *Public Policy Digest* of the National Planning Association, *Public Health Reports*, and *New York Medicine*. A number of the state health departments, notably California and Colorado, have prepared and published full digests of the report, both as to its general principles and their application to the respective state situations.

A follow-up institute of state health officers and directors of local health administration is planned during the coming year to exchange information, develop activity, and influence professional and public opinion in favor of early completion of the total coverage of the nation with full-time local health units.

The work of the Subcommittee on Evaluation of Administrative Practices has been confined this year to the Study Committee on Whooping Cough, under which extensive studies of antigen have been conducted by Dr. Pearl Kendrick, and to the reorganization of the Study Committee on Goitre. The death of the Secretary of the latter, Dr. Fred B. Miner, is recorded with regret. His successor is Dr. O. P. Kimball. Reports from both Study Committees are looked for in 1946.

The Subcommittee on Accident Prevention, Donald B. Armstrong, M.D., Chairman, has developed a plan for the integration of home safety activities in programs of state and local health de-

partments which was published in the *Journal* in March. In the same issue there was published an article under Dr. Armstrong's authorship entitled "Accident Prevention — An Essential Public Health Service."

The Committee on Administrative Practice is now 25 years old and its quarter-century anniversary was commemorated in the December *Journal* by the publication of a historical review of its accomplishments. The Executive Board salutes the committee, the many persons and agencies who made it possible, and the financial supporters without which nothing could have been done. During 1945, the Commonwealth Fund and the general Association budget have provided the sinews of war. Under a new plan which will go into effect in 1946, additional Association funds will be made available to the committee so that subcommittees in addition to that on State and Local Health Administration, whose activities will continue to be financed by the Commonwealth Fund, may have opportunity to meet and carry out ambitions it was not possible before to encourage. The American Drug Manufacturers Association has recently renewed the financing of the pertussis study through contributions from seven of its members.

#### *Committee on Research and Standards*

The Committee on Research and Standards, Kenneth F. Maxcy, M.D., Chairman, can point with pride to the activities of its subcommittees. Among these is the Subcommittee on Communicable Disease Control, of which Haven Emerson, M.D., is chairman, whose outstanding contribution has been the revision and extension of the report on the *Control of Communicable Diseases*, Sixth Edition. This was prepared in coöperation with representatives of the British Ministry of Health, and is official with the U. S. Public Health Service, U. S. Navy, has been approved

in principle by the Surgeon General of the Army and by the United Nations Relief and Rehabilitation Administration, and has been recommended for adoption as an official statement by the National Health Administration of China and by the Dominion Health Council of Canada. Seventeen state and local health departments have distributed it over their own imprints. Other state and territorial health departments, as well as South American countries, have made it official. About 100,000 copies have been printed in English. The Office of War Information has had it translated into Italian, French, and Thai, in a total of approximately 150,000 copies. The Pan American Sanitary Bureau has undertaken the translation into Spanish and Portuguese. A Chinese translation is also under way.

The work of the Subcommittee on Food Utensil Sanitation under the chairmanship of Walter D. Tiedeman has moved forward during the year because of the fortunate opportunity of developing relationships with the National Sanitation Foundation, which has agreed to support a new project, in cooperation with the subcommittee, for the evaluation of dishwashing devices, both in terms of physical aspects and chemical and bacteriological controls. It is appropriate that the coöperation of the National Sanitation Foundation in providing meetings of this group be properly acknowledged.

The Subcommittee on Morbidity Registration Statistics, Lowell J. Reed, Ph.D., Chairman, has advanced its purposes very rapidly through the meeting of an International Committee on Morbidity Registration, appointed by the United States Department of State, in fulfillment of a request made by the Mixed Commission in 1938. This committee has been meeting continuously over the past several weeks in Washington.

The Chairman of the new Subcommittee for the Evaluation of Methods to Control Air-borne Infections, James E. Perkins, M.D., approached his task by writing a review article for the *Journal* on the present situation. He has had two meetings of his subcommittee in 1945, with real progress reported.

The names of the members of this and other committees appointed since the April *Journal* went to press will be published early in 1946.

The Subcommittee on Hygiene of Housing, Professor C.-E. A. Winslow, Chairman, has rendered consultant service to the Memphis Health Department, the Philadelphia City Planning Commission, the St. Louis Health Department, and the Milwaukee Health Department. Part I of *An Appraisal Method for Measuring the Quality of Housing; A Yardstick for Health Officers, Housing Officials and Planners* was published in 1945 and has had gratifying acceptance. The National Association of Housing Officials has endorsed the method and is urging housing authorities to undertake surveys using its techniques. Parts II and III of the *Appraisal Method* are ready for the printer and will be published in 1946.

The Committee on Research and Standards has before it the reviewing responsibility, in advance of recommendation to the Governing Council, for promulgation as Association standards, of the Ninth Edition of *Standard Methods for the Examination of Water and Sewage*, and the Ninth Edition of *Standard Methods for the Examination of Dairy Products*.

#### *Committee on Eligibility*

The Committee on Eligibility has approved during the year over 1,000 applicants for membership, and at a meeting held in New York in October with representatives of all Sections of

the Association present it approved 121 applicants for Fellowship, 7 applicants for life membership, and the South Dakota Public Health Association as an affiliated society. The sudden death of the Chairman, Don W. Gudakunst, M.D., on January 20, 1946, is recorded with regret.

#### PUBLICATIONS

The Association has had a busy publication year. Books and reports have been mentioned in their proper places, but they are brought together here for the sake of the record.

*An Appraisal Method for Measuring the Quality of Housing*, Part I

*Bibliography on Public Health and Allied Subjects* (23rd edition)

*Control of Communicable Diseases* (6th edition)

*Diagnostic Procedures and Reagents* (2nd edition)

*Employment Opportunities in Public Health Health Practice Indices* (3rd edition)

*Local Health Units for the Nation* (Published by the Commonwealth Fund)

*Spanish Summary of 8th Edition of Standard Methods for the Examination of Dairy Products*

*Vital Statistics Directory* (3rd edition)

In the distribution of the Association's publications, as well as those of other agencies in the public health field, the Book Service continues to be a vital part of the Association. It has just completed one of the most active years in its 24 year history, having had a larger volume of business in terms both of number of books and reports distributed and in dollar volume. The 23rd edition of the *Bibliography on Public Health and Allied Subjects* (17,000 copies) has just been printed and is being distributed to members and subscribers. The demand for the 8th edition of both *Water Analysis and Milk Analysis* has been so great that war-time editions in paper covers were necessary pending the new editions expected off the press late in 1946. *Control of Communicable Diseases* and

*Local Health Units for the Nation* are among the best sellers month after month. But the Book Service also supplies members and others with free material, the *Bibliography* already mentioned, and reprints of *Journal* articles, especially the popular reports on professional qualifications of public health workers by the Committee on Professional Education.

#### MEMBERSHIP

It cannot be said too frequently that the strength of the Association lies in its membership and the voluntary service of its members to their professional society. Year after year we are able to report a new all-time membership record as qualified persons working in public health and in its related fields recognize what they can give to the Association and what the Association can give them. The membership at the end of 1945 exceeded that of any previous year by 353. On December 31, the total number of members was 9,408. Of these, 1,633 are Fellows. Included also are 26 Affiliated Societies, 36 Sustaining Members, of whom 5 were elected in 1945, and 16 Honorary Fellows. Sixty-nine applications for life membership are pending, and if these are favorably acted upon, the total number in this class will be 281. The membership figure of 9,408 includes also the 500 men and women in the military services whose dues were cancelled for the duration. It is gratifying to see how quickly these members reestablish their affiliation on a paying basis as soon as they are released from service.

#### FINANCES

The Association income for 1945 has been nearly \$225,000 and expenses have been approximately \$210,000. Income from membership has been the highest in the Association's history and this is also true of the *American Journal of*

*Public Health* and the sales of Association publications.

#### ACKNOWLEDGMENTS

The Executive Board takes this opportunity to acknowledge with great appreciation grants from donors, including the Commonwealth Fund, for appropriations to the State Studies and to the Subcommittee on Local Health Units of the Committee on Administrative Practice, and to the Accreditation Project conducted by the Committee on Professional Education; the Milbank Memorial Fund, the National Tuberculosis Association, and the Field Foundation for grants to the Committee on Hygiene of Housing; the Albert B. and Mary Lasker Foundation for a grant for awards to be given by the Association; and to the Rockefeller Foundation for a grant for the work of the Subcommittee on Medical Care. Acknowledgment to Sustaining Members for continued support to the entire Association program is gratefully made.

There is no activity of the Association which is not of the membership, by the membership, and for the membership, and this Report would be incomplete if it did not pay tribute to the hundreds of persons whose thought,

time, and hard work have contributed to the Association's progress this year. The Governing Council, the Executive Board, the Sections, the Standing and other Committees have had continuing responsibilities and therefore the widest opportunity to influence our policies and program. Many others have been called upon briefly for special service; still others, working alone and spontaneously, have done much to increase Association membership and otherwise extend the usefulness and prestige of the organization. The response from organized groups and individuals alike has been magnificent. This is the priceless ingredient of the atmosphere referred to at the beginning of this series of reflections. It can be depended upon as we face the known tasks of 1946 and those, now unforeseen, which will come our way.

Once more, as in years past, it is well to reiterate and to reemphasize that little or none of this record of activity and accomplishment would have been possible without the untiring, intelligent, and sympathetic administration and leadership by the Executive Secretary and his staff.

ABEL WOLMAN, DR.ENG.,  
*Chairman*

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## GOVERNOR DEWEY'S HEALTH MESSAGE

ON March 4, Governor Thomas E. Dewey delivered to the Legislature of New York State a special message formulating a new and comprehensive state health program. The recommendations of this message have now been enacted into law, and should mark a new milestone in the history of American public health. We congratulate Dr. E. S. Godfrey, State Commissioner of Health, and Chairman of the informal committee which developed this excellent and far-reaching program, and his associates in planning, particularly Mr. Homer Folks.

Perhaps the most immediately significant proposal of the Governor's message is a major increase of grants for the upbuilding of local health departments. As in other North Atlantic States, New York has for thirty years attempted to stimulate the establishment of full-time county health units—but with very limited success; at present, only 6 such units are in existence, out of a total of 57 upstate counties. No state grants have previously been offered to the larger municipalities. The bill calls for state-aid reimbursement for sums expended by county health departments up to 75 per cent of the first \$100,000 of the county budget and 50 per cent of expenditures above that figure. Furthermore, it provides for 50 per cent reimbursement for cities with a population of 50,000 or more. All in all, there is involved an appropriation of nearly three million dollars to New York City, nearly one million to other large cities of the state, and about a million and a half to the smaller communities. The inclusion of cities as recipients of state aid is an interesting new departure, which has perhaps special justification in the trend toward a flight of taxable capital from formal municipal limits to adjacent suburban areas.

In addition to these grants for public health services in general, Governor Dewey recommends new grants in a total of about six millions for "an all-out fight on tuberculosis with the objective of wiping out this dread disease in our state in twenty years or less." The state funds are to be used for an approximate 50 per cent aid in the care and treatment of tuberculosis, on a patient-day basis. As a condition of these grants, the "means test" as a condition for admission to approved tuberculosis hospitals would be entirely eliminated—"a tremendously

important psychological factor which will permit prompt hospitalization of patients, thus avoiding risk of infecting their families and others and also, by prompt treatment, saving countless lives."

A third extremely interesting proposal of the message is the establishment of an Interdepartmental Health Council to consist of the State Commissioners of Health, Social Welfare, Mental Hygiene, and Education and the chairman of the Health Preparedness Commission for joint planning in the areas of service where the jurisdictions of these officers may overlap. This is a timely recognition of the fact that public health, in its conventional sense, is not an isolated function but is intimately related at many points to more general problems of welfare and of education.

Passing over many minor and special phases of the proposed health program, there is one other provision which will be of special interest to our readers. This is a recommendation that the State Department of Health should establish a service for recruiting and training physicians and nurses for public health practice. Dr. Godfrey has already—with limited resources—pioneered along this line. An expansion of such training facilities would be of the greatest value, since the deliberations of our Committee on Professional Education have made it increasingly clear that the academic training provided in schools of public health should be supplemented by a definite period of supervised field training.<sup>1</sup>

In 1914, with the reorganization of its State Health Department, under the guidance of Hermann M. Biggs, New York State gave inspiring leadership to other states. The carrying out of the program now proposed should again place the Empire State in the forefront of public health advance.

#### REFERENCE

1. Horning, Benjamin G., M.D. Public Health Field Experience. *A.J.P.H.*, 36:135 (Feb.), 1946, and Editorial, Field Training for Public Health Personnel. *A.J.P.H.*, 36:178 (Feb.), 1946.

## CASE FINDING IN THE CONTROL OF SYPHILIS

THE health officer who undertakes the control of syphilis discovers, very early, that he has but few tools with which to work and those of limited efficiency. Prophylaxis, case finding, treatment, and education are the only procedures theoretically available for his use.

Prophylaxis has had an excellent opportunity, in the Armed Forces, to prove its worth; its advocacy and use being tolerated because of the nature of the emergency. Under the most ideal conditions, however, it has had to be augmented by the repression of prostitution and other forms of sexual promiscuity, and by intensification of the civilian genitoinfectious-disease control program. There is reason to believe that the combination of procedures has very greatly retarded the spread of infection, but it has not kept the rates of infection from rising. In some theaters, as a matter of fact, they have been skyrocketing. It does not seem that there can be much hope for the control of syphilis by prophylaxis, in a disapproving and uncontrollable civilian population.

Case finding may be facilitated in several ways:

1. By public education to encourage suspicion of infection and prompt medical observation
2. By mass blood testing for case finding purposes
3. By routine blood testing and examination of all persons who come to medical attention, whether because of illness or for routine examination (as in pregnancy, for employments etc.)
4. By direct epidemiological case finding, starting with a known case

To be effective in preventing the *spread* of infection, case finding must find cases while they are still infectious; and it must tend to find them early so as to reduce the period during which infection may be spread; otherwise no substantial progress will be made in prevention.

By these criteria, case finding by public education is, potentially, the most effective procedure of them all. If every person who indulges in a questionable sexual relationship, and who shortly develops a genital lesion or a rash, would seek competent medical attention at once, innumerable infections would be brought under control. Although such a program for public and professional education should be pushed with vigor and intelligence, it cannot be anticipated that either the public response or medical diagnostic competence will shortly become adequate to the solution of the problem of syphilis control. This form of case finding will have to be augmented, for a long time to come, by other case finding procedures.

Mass blood testing is an expensive, a cumbersome and, to a considerable degree, a "shotgun" procedure. It is, in general, incapable of such regular and frequent repetition as to assure the detection of new infections as they occur and while they are still communicable. In areas where syphilis is extremely prevalent, such mass testing may be of value, as shown in a recent campaign of the Savannah-Chatham County, Georgia, Health Department.<sup>1</sup> Here, mass testing for both syphilis and tuberculosis was carried on simultaneously at a cost of about fifty cents for syphilis testing for each person examined and with 18 per cent of all persons tested positive.

Routine blood testing is a highly selective form of mass blood testing, and it has the same shortcomings as a case finding procedure in early syphilis. To the extent that it is used in the examination of sick persons, and is accompanied by competent physical examination and reliable history taking, it may lead somewhat more often to the detection of early infections.

Case finding by direct epidemiologic investigation is the most immediately effective and the most continuously applicable method for discovering infectious early syphilis. Given a patient with an open early lesion, it is among that patient's sexual contacts, within the limits of the duration of the infection and its incubation period, that other early infections are most likely to be found. For all practical purposes, syphilis is spread by a single form of contact, sexual intercourse. Unless the patient has been highly promiscuous, he (or she) should be able to recall most of those contacts over a considerable period of time. The search for contacts may, therefore, be carried on according to a definite pattern, along definite lines, with considerable potential hope for success.

It is true that there are many obstacles to this form of case finding. The patient often refuses to admit that he has been as promiscuous as he actually has been. The long incubation period of the disease permits the source of the infection to continue to operate, often for weeks, before a case comes to light and prompts search for the source and for all of the infections which have occurred in the meantime. (In this connection, the epidemiological follow-up of cases of gonorrhea may be of special value in leading more promptly to discovery of persons of promiscuous habits, likely to have, and to spread, both infections.) The variable length of the incubation period, combined with the promiscuity of the patient, makes it impossible, in many cases, to predetermine who, among all of the contacts, is the source; hence many persons must be identified, found, and examined, in the hope that the source will be among them. The trail is often

crossed by unrelated infections which lead away in new directions, but which must be followed through. Some of these are time-wasting cold trails of late, noncommunicable syphilis. The very promiscuity which spreads syphilis leads into the blind alleys of anonymity, and the more generally promiscuous the population involved, the greater the number of dead ends. (Case finding among the reported contacts of members of the Armed Forces was nowhere excitingly productive.)

In spite of its shortcomings, both experience and logic dictate the use of this procedure in the control of syphilis. Competent epidemiologists, working in communities with reasonably stable populations, and in which prostitution has been repressed, have enjoyed a very considerable success with this method. It will become constantly more effective as public and professional education improves, and more infections come to attention earlier to provide more starting points for direct case finding.

Treatment cannot contribute substantially to the control of the spread of syphilis unless case finding, by one method or another, has first produced *early* infections to treat. Once an infectious case is found, moreover, treatment must be adequate to the permanent control of communicability, or the end result of the case finding will be *nil*. Thus, case holding, to the point of permanent noninfectiousness, is an essential part of the process and cannot be neglected.

There is disturbing evidence that the rapid cure of early syphilis leaves the patient open to prompt reinfection; which is of relatively rare occurrence under the older, slower treatment schemes. Promiscuous persons may become repeated sources of new infections and pose new problems in case finding. In fact, if case finding is not speeded up beyond all previous performance, a cured patient may even be reinfected by the original source of his infection. This probability is so great in gonococcal infections that every attempt is now made to treat both the patient and his contacts on the same day! It seems clear that direct case finding must be promoted, expanded, and speeded up to the limit of its possibilities, or more ground may be lost than gained by the use of the more promptly and more completely effective therapies.

Important as it is to use these inefficient tools for the control of syphilis to the limit of their capacities for accomplishment, it remains a fact that no communicable disease has ever been controlled by case finding and case treating procedures alone. Unless a disease can be prevented from occurring at all there is little hope for its ultimate permanent control. The Scandinavian countries have now discovered that a population may be so disturbed during times of stress as to undo all that had been accomplished by case finding and treatment under more normal conditions. The rates of infection with syphilis have returned during the war in those countries to their 1920 levels.<sup>2</sup>

It is *not* the responsibility of the health officer, alone, to teach people how to behave or why they should so behave. The job must not be left entirely to the health department. Society knows very well that good sexual morality and sexual responsibility are essential to the preservation of the family and, therefore, of society itself. This would still be true even though syphilis and gonorrhea had never existed. It is to the interest of society to develop good sex character for its own sake. Sex character will never be built out of lectures on the dangers of infection with genitoinfectious disease, nor on the risks of becoming mothers out of wedlock, nor by the blackout of all discussion of sex. It will be built only out of a deep sense of sexual responsibility, such as that which finds its fullest



expression in the family. Sexual promiscuity is sexual irresponsibility. The place of the family as the indispensable unit of society cannot be secure so long as sexual irresponsibility is the order of the day.

## REFERENCES

1. Special Report. *Ven. Dis. Inform.*, 27:28 (Feb.), 1946.
2. Rapid Increase of Syphilis in Europe. *Epidemiol. Inform. Bull.*, UNRRA, Washington. 1:403-405 (June 30), 1945.

## MILTON JOSEPH ROSENAU

THE year which has just passed has been marked by heavy losses in the higher ranks of our leaders in the field of public health. Ravenel, Leathers—and now Rosenau are gone. Our sense of loss is mitigated only by pride in the fact that we have—in our professional field—the achievements of such outstandingly distinguished leaders to chronicle.

Milton J. Rosenau, President-Elect of our Association, was born in Philadelphia in 1869 and died at Chapel Hill at the age of 77, on April 9, last.

Dr. Rosenau took his medical degree at the University of Pennsylvania in 1889, and pursued his postgraduate studies in Berlin, Paris, and Vienna. His professional life was divided into three successive phases.

From 1890 to 1909, he served in the United States Public Health Service and for the last ten years of that time was Director of the Hygienic Laboratory. This Laboratory, which is now the National Institute of Health, owes its impetus and its high scientific standards largely to "M. J." The writer of this editorial happened to be a member of an advisory group under the Chairmanship of W. H. Welch, and heard Dr. Welch tell the then Secretary of the Treasury that there was no research institution in the world which was making a greater total contribution to medical knowledge than this United States Public Health Service Laboratory. Rosenau's own research on the standardization of tetanus and diphtheria antitoxin, on vaccine virus, his contributions to our knowledge of anaphylaxis, his studies on milk sanitation and milk pasteurization, and on the epidemiology of typhoid fever and acute respiratory infections was of a high order.

In 1909 Rosenau began the second major phase of his career as Professor of Preventive Medicine and Hygiene at Harvard where he continued to serve until 1935. Between 1913 and 1922, he, with W. T. Sedgwick and G. C. Whipple, directed the pioneer Harvard-Technology School for Health Officers; and between 1922 and 1935 he was Professor of Epidemiology in the Harvard School of Public Health. For seven years (1914-1921) he served also as Chief of the Division of Biologic Laboratories of the Massachusetts State Board of Health.

While in Washington Rosenau had published a book on *Disinfection and Disinfectants* (1901). At Harvard he made an important contribution in a work on *The Milk Question* (1912). A year later, in 1913, came his *magnum opus*, *Preventive Medicine and Hygiene*, which has remained not only the standard textbook in this field but one of the best examples of an ideal textbook in any area related to medicine. Its last (6th) edition was published in 1935. Dr. Rosenau received the Gold Medal of American Medicine for Service to humanity in 1912 to 1913, and the Sedgwick Memorial Medal of our Association in 1934.

Here was what seemed a full and successful life. Dr. Rosenau retired from

Harvard at the age of 66. He seemed broken in health and suffered from tragic bereavements. Then a miracle happened; and instead of resting on his laurels, he began a third wholly new phase of his career. He recovered his health and took the post of Professor of Epidemiology at the University of North Carolina. In the delightful environment of Chapel Hill he built up a new School of Public Health, now recognized as one of the accredited schools of our Association, and the pioneer institution of its kind in the Southeast. He was constructively active to the very end of his long life. Less than three months ago he went to Puerto Rico to represent the A.P.H.A. at the meeting of the Puerto Rico Public Health Association; and, even after his first heart attack in March, he took an active part in the Institute for Health Officers at Chapel Hill, jointly sponsored by the University and the A.P.H.A.

Dr. Rosenau's youthful vigor of spirit and his soundness of judgment will always live on with us who knew him as an inspiration. His erect, military carriage and his sardonic comments emitted with a piercing glance from heavy-lidded eyes might have been forbidding in another man—and indeed no one took liberties with M. J. But his winning smile prevented any sting; and he was the soul of kindness, always ready to go out of his way to help a pupil, a colleague, or a friend. Taking into account, not only his teaching for 35 years at two universities, but also his book on *Preventive Medicine and Hygiene* to which we all refer in time of need, it is probable that no single individual has ever taught so many public health workers so much as has M. J. Rosenau.

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## Fellowships in Health Education—1946

The U. S. Public Health Service has announced that fellowships for one year of graduate study in health education, leading to a master's degree in public health, are being offered to qualifying men and women by the U. S. Public Health Service through funds made available by the National Foundation for Infantile Paralysis.

Fellowships provide a year's study in public health education in an accredited school of public health, including an academic year of eight or nine months and three months of supervised field experience in community health education. A stipend of \$100 a month for the entire period of academic and field training, plus tuition and travel expenses for field experience, is provided. Travel to and from the university at the beginning and end of training is not included.

Fellowships are effective for the academic year starting in the fall of 1946. Those eligible to apply include men and women in sound health between the ages of 22 and 40 who are citizens of the United States and who meet the entrance requirements of the School of Public Health of their choice. Application forms may be obtained from the Surgeon General, U. S. Public Health Service, Washington 25, D. C. Completed forms, accompanied by two recent photographs and official transcript of college credits and a 500 word statement of why applicant is interested in entering the

field of health education must be in the hands of the Surgeon General by June 1, 1946. Veterans with necessary qualifications are encouraged to apply for fellowship. The subsistence allowance for veterans granted under the G.I. Bill of Rights will be supplemented by fellowship funds to bring the stipend to \$100 a month.

Candidates must maintain a scholastic average of "B" to retain fellowship. Persons accepting fellowships will be expected to work in the field of health education for at least two years after completion of training. The Public Health Service and the National Foundation assume no responsibility for placing fellows in positions.

The Schools of Public Health authorized include those institutions in the United States accredited to give the master's degree in public health as announced in the March issue of the *American Journal of Public Health*: Columbia University, Harvard University, Johns Hopkins University, University of California, University of Michigan, University of Minnesota, University of North Carolina, and Yale University. Candidates will be permitted to express their choice of schools, and efforts will be made to grant first or second choice in so far as possible. The Service has announced that these fellowships are not available to employees of health departments because grant-in-aid funds are available for the training of such personnel.

# American Public Health Association

## COMMITTEES

1945-1946

IN the April, 1945, issue a complete list of Association Committees, including Section Councils and Representatives to Other Organizations and Committees was published.

The list which follows presents Standing Committees and their Subcommittees, Association Committees, and Representatives. It omits Section Councils because there have been no changes in personnel since the last list was published. It includes only changes in Section Committees. For a complete record of Section Councils and Section Committees for 1945-1946, the listings in the April, 1945, JOURNAL must be used in conjunction with the information provided here.

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Alfred H. Fletcher

B. M. Pettit

## Changes in Section Committees since April, 1945

(Use this information in conjunction with list published in April, 1945, issue)

### Laboratory Section

#### Standard Methods Committee on Examination of Milk and Milk Products

##### *Associate Referee for:*

Phosphatase Test — Professor L. H. Burgwald, Ohio State University, Columbus, Ohio, replaces J. H. Shrader, Ph.D.

### Engineering Section

#### Committee on Water Supply

Charles H. Spaulding, replaces Hayse S. Black

### Food and Nutrition Section

#### Committee on Standard Methods for the Microbiological Examination of Foods

Carl S. Pederson, Ph.D., added

#### Committee on Milk and Dairy Products

Ethel A. Martin, *Chairman*, National Dairy Council, 111 N. Canal Street, Chicago, Ill., replaces J. A. Keenan, Ph.D.

#### Committee on Foods (Except Milk)

Reginald C. Sherwood, Ph.D., replaces Paul S. Prickett, Ph.D.

#### Committee on Membership and Fellowship

Alice H. Smith, *Chairman*, Department of Health, Lansing, Mich., replaces Rachael L. Reed

### School Health Section

#### Committee to Study School Health Legislation

N. D. Nielson, Ph.D., added

### Public Health Education Section

#### Committee on Utilization of Commercial Advertising for Health Education

Ann W. Haynes, *Chairman*, 760 Market Street, San Francisco, Calif., replaces Raymond S. Patterson, Ph.D.

#### Committee on Public Health Education Problems in the Northeastern Region

John E. Farrell, *Chairman*, 106 Francis Street, Providence, R. I.

##### *Membership:*

All Fellows and members in the States of the Northeast Region—Maine, Vermont, New Hampshire, Massachusetts, New Jersey, Rhode Island, West Virginia, Maryland, Pennsylvania, New York, Washington, D. C., Connecticut.

#### Committee on Public Health Education Problems in the Canadian Region

Norman L. Burnette, Sc.D., *Chairman*, 180 Wellington Street, Ottawa, Ont., Canada

##### *Membership:*

-All Fellows and members in Canada

#### Committee on Public Health Education Problems in the Hawaiian Region

Alice L. Spillane, *Chairman*, Public Health Fund, Honolulu, T. H.

##### *Membership:*

All Fellows and members in Hawaii

#### Committee on Public Health Education Problems in the Puerto Rican Region

Alice H. Miller, *Chairman*, U. S. Public Health Service, San Juan, Puerto Rico

##### *Membership:*

All Fellows and members in Puerto Rico

## Representatives of the American Public Health Association to Other Organizations and Committees for 1946

### Advisory Council on Medical Education

William P. Shepard, M.D.

James A. Doull, M.D., alternate

### American Association for the Advancement of Science

Reginald M. Atwater, M.D.

Abel Wolman, Dr.Eng.

### American Committee on Maternal Welfare

Thomas Parran, M.D.

### American Documentation Association (1943-1946)

Halbert L. Dunn, M.D.

### American Hospital Association (liaison representative)

Charles F. Wilinsky, M.D.

### American Society of Civil Engineers and Federation of Sewage Works Associations—Joint Committee for Revision of the Report on Definition of Terms Used in Sewerage and Sewage Disposal Practice

Gordon M. Fair

H. A. Whittaker

### American Society for Testing Materials —Committee on Soap

Carl R. Fellers, Ph.D.

### American Standards Association

Building Code Correlating Committee  
(1945-1947)

J. Lloyd Barron, C.E.

W. Scott Johnson, alternate

### Letter Symbols and Abbreviations for Science and Engineering

Earle B. Phelps

### Safety Code for Dry Cleaning Establishments

H. H. Schrenk, Ph.D.

H. G. Dyktor, alternate

### Safety Code for Exhaust Systems

Henry Field Smyth, M.D.

### Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases

J. J. Bloomfield

### Sectional Committee on Bedding and Upholstery—Subcommittee on Sterilization

F. J. Maier

### Sectional Committee on Building Code Requirements for Light and Ventilation

Rollo H. Britten

C.-E. A. Winslow, Dr.P.H.

### Sectional Committee on Minimum Requirements for Plumbing and Standardization of Plumbing Equipment, A-40 and Subcommittee No. 1

M. Warren Cowles

Sol Pincus, C.E.

### Sectional Committee on Places of Outdoor Assembly

J. Lloyd Barron, C.E.

### Sectional Committee on School Lighting

Leonard Greenburg, M.D.

Joel I. Connolly, alternate

### Sectional Committee on the Safety Code for Industrial Sanitation in Manufacturing Establishments

Leonard Greenburg, M.D.

Kenneth E. Markuson, M.D., alternate

### Ventilation Code

Earle B. Phelps

### Commission for the Study of Biological Stains

William D. Stovall, M.D.

### Council on Rheumatic Fever

David Rutstein, M.D.

George M. Wheatley, M.D.

### International Congress on Tropical Medicine and Malaria (Organization Committee)

Henry E. Meleney, M.D.

### Joint Committee on Community Nursing Service of the National Organization for Public Health Nursing

Alfred L. Burgdorf, M.D.

### Joint Committee on Definition of Terms Used in Water Works Practice (Joint with the American Society of Civil Engineers and the American Water Works Association)

Earle B. Phelps, *Chairman*

Sol Pincus, C.E.

Ralph E. Tarbett, C.E.

### National Bureau of Standards—Standing Committee on Insect Wire Screening TS-3977

C. C. Kiker

**National Conference for Coöperation in  
School Health Education**

C. C. Wilson, M.D.

**National Conference on Home Safety**

Reginald M. Atwater, M.D.

**National Conference on Uniform Traffic  
Accident Statistics**

Robert J. Vane

**National Congress of Parents and  
Teachers — Advisory Committee on  
Health and Summer Roundup of  
Children**

Dorothy Mendenhall, M.D.

**National Council on Rehabilitation**

Hart E. Van Riper, M.D.

**National Health Council**

Reginald M. Atwater, M.D.

Louis I. Dublin, Ph.D.

Ernest L. Stebbins, M.D.

**National Nutrition Advisory Committee**

Robert H. Riley, M.D.

**National Safety Council—Home Safety  
Advisory Committee**

Edward S. Rogers, M.D.

**National Committee on Films for Safety**

Harry E. Kleinschmidt, M.D.

**National Technological Civil Protection  
Committee**

Abel Wolman, Dr.Eng.

Arthur E. Gorman, alternate

## Credit Lines

### MILWAUKEE LOOKS AT HOUSING

The Association's *Appraisal Method for Measuring the Quality of Housing* has served to dramatize existing slum conditions in Milwaukee and stimulate action regarding them. *The Architectural Forum* for December, 1945, under the title "Slum Slide Rule" says "City health inspectors, armed with new authority to condemn unfit dwellings, made a systematic room to room survey of the city's worst slum area, inspecting and rating by an elaborate point system worked out by the American Public Health Association, every sink, screen door and closet, bed and toilet. . . . First findings showed that spring housecleaning in Milwaukee's sixth ward would be a year-round job."

The same month *The Municipality*, a magazine of municipal affairs of the League of Wisconsin Municipalities, published *An Appraisal Method for Housing Conditions and Needs* by Dr. E. R. Krumbiegel, City Health Commissioner. He points out that the A.P.H.A. *Appraisal Method* is the only mechanism so far developed for an exact analysis of the extent and magnitude of "blighted" areas. He tells in detail the story of how the method is in use in Milwaukee and the way the new municipal ordinance operates in enforcing housing standards.

"Use of the housing appraisal method points the way to housing control on a systematic basis. It renders futile patchwork ordinance of enforcement unnecessary. Community action can proceed on the basis of typical conditions rather than by stressing a few of the worst or best examples of housing in a given area. It becomes possible to report objectively to the municipal administration on the state of housing

in any problem area. The worst slum areas can be demarcated . . . . A definite long-range program can then be worked out for these selected areas . . . . There are numerous other practical applications of the appraisal method. It is believed that in Milwaukee its use will have effects of primary importance in determining public policy in the fields of housing and city planning."

### THE SCHOOL HEALTH SECTION ANALYZES ITS NEEDS

As a new Section of the Association, the School Health Section has utilized the year just past, in which no Annual Meeting was held, to get acquainted with itself, as it were. A recent post card inquiry, answered by nearly 40 per cent of its more than 200 members, and analyzed by S. S. Lifson of the Section's Committee on Pupil Health Experience, reveals a variety of research projects relating to school health being carried on by Section members. Of the 50 studies reported, 25 concerned health service, while others related to health education or college curricula, to in-service training, or to community health education. "These research interests," says the author, "present evidence that those Section members engaged in school health work are not content to look at their responsibilities as routine."

In reply to a request for information as to help desired by members from the Section, the 82 replying listed 63 items on which they would like help. Of these, 27 were requests for information about school health matters—standards for personnel and facilities, definition of school health personnel functions, cooperative experience of departments of health and education, reports on special problems and other bibliographical

material, among them. The next most frequent item for which help was asked was on methods of health education. Others were on case finding methods. Others were on teacher training and in-service training for teachers. Significantly, one request was for action by the Section regarding salary schedules for school health personnel.

Mr. Lifson's detailed analysis of this material is being made available to the membership of the School Health Section.

#### RURAL HEALTH

Taking cognizance of the fact that "farmers want better health" and that the 57 million rural citizens in the United States do not have parity with urban dwellers in the quality of public health services available to them, the Department of Agriculture's Interbureau Committee on Post-War Problems presents a discussion of the main problems of rural health services and what can be done about them. This is a well illustrated and well printed pamphlet entitled "Better Health for Rural America: Plans for Action for Farm Communities" prepared by a group under the direction of Dr. F. D. Mott of the U. S. Public Health Service, and including Farm Security Administration, Department of Agriculture, Children's Bureau, and Social Security Board personnel.

It summarizes effectively the already known facts about the shortage of doctors, dentists, hospitals and other facilities in rural communities and the adverse effects of poor health services on the rural economy; analyzes what corrective measures have been taken, such as the Department of Agriculture's health programs, development of local health services, Blue Cross plans, and others; and outlines what has to be done now. The current objectives are five: (a) ease the payment of the medical bill, (b) provide adequate hospitals

and health centers, (c) increase the number of doctors, dentists, and nurses in rural areas, (d) organize preventive health services and educate the people about health and disease, (e) elevate the scientific quality of rural medicine and related services. It should have a stimulating effect upon the development of rural health and medical care services.

#### DENTAL HYGIENISTS IN A DENTAL PROGRAM

*Tic*, the monthly organ of Ticonium, manufacturers of dental materials and prosthetics, in its issue of February, 1946, initiates "The Dental Hygienists' Corner," a page devoted to the work of the dental hygienist in all fields. Pointing out that dental patient traffic will continue heavy for some time to come, it suggests that the National Association of Dental Hygienists sell the dental hygienist to the dental profession and to the public interested in dental and public health economies. As a medium for this education it reserves a page to be filled by dental hygienists in their individual or association capacities, and pays a \$25 war bond for each contribution in addition. *Tic* already has a "Dental Assistant's Corner."

The February issue also contains a complete reprint of Philip H. Austen's introduction to the 10th edition of *Harris's Principles and Practice of Dentistry*, published in 1879, a year after Austen's death. Its content is significant as an essay on education, particularly of the medical and dental professions.

#### PSYCHIATRY BELONGS IN GENERAL HOSPITALS

The March, 1946, *Hospital Survey News Letter* of the Commission on hospital care, has an excellent brief review of the trends, dating back to 1729, that led toward broadening the base of general hospital service to give complete

care to all types of patients, including those suffering from mental illness. Among the mile posts mentioned are the Philadelphia and Bellevue almshouses established in 1729 and 1736 to provide custodial care for insane, the admission of mental patients to a special psychiatric division of New York Hospital in 1792, foundation of the American Psychiatric Association in 1844, the psychiatric division of Albany Hospital established in 1902 and, for 1946, "integration of psychiatric services in general hospitals considered practical and desirable."

#### HEALTH EDUCATION FOR MODERNS

*Take-Off* by Grace T. Hallock is health education for the air age, prepared for the National Tuberculosis Association. Addressed primarily to high school seniors, it bases its message on the concept of life as a series of take-off and landings—and the preparations necessary for them—the periodic examination, grooming, sportsmanship, fueling, relaxation, safety, responsibility, etc. Each subject is illustrated with an excellent photograph of its airplane counterpart imaginatively assembled and captioned. The pamphlet ends with 11 questions, a "yes" answer to which makes one ready for the "take-off." It is an excellent synthesis of writing, photography, and typography in the service of health.

#### A NEW SLANT ON GARDENING

The March *Michigan Public Health* is the "Garden Edition," devoted almost exclusively to the home garden, giving detailed instructions for kinds of fruits and vegetables to raise, the varieties suited to the Michigan climate, preparation of soil, time of planting, and amounts to be grown and stored. It is all interestingly written and illustrated, with facts checked by the State Agricultural School or the Department of Agriculture.

And why does a state health department's fancy turn to gardens in the spring? An article in the same issue headed: "Needed: A Cow and a Few Tomato Plants," says, "The urgent need for family gardens is sharply pointed up by recent surveys of foods eaten by school children in two Michigan counties. Children's eating habits showed serious deficiencies in tomatoes, green leafy and yellow vegetables, fruit, and milk." Another article reminds the reader that "world food shortages are critical." And finally in an article "Gardens for Health," Dr. DeKleine, the Health Commissioner says, "Yes! There is an abundance of wealth in gardening if we measure the dividends in physical, mental, and spiritual values."

This issue seems to Credit Lines a unique and imaginative tying up of parochial and world interests, and finding the recreative values in useful projects.

#### HEALTH PROJECTS IN LATIN AMERICA

The Food Supply Division of the Institute of Inter-American Affairs publishes a monthly report which should be of value to persons who are interested in Latin American health projects. The report is generously illustrated with native people and scenery and contains a good brief summary of health activities being carried on in various Central and South American countries.

The Health and Sanitation Division likewise issues a fortnightly newsletter giving sanitation news of the Americas.

#### UNITED NATIONS NEWS

The January, 1946, issue of *United Nation News* is Vol. 1, No. 1, published monthly by the Woodrow Wilson Foundation and devoted exclusively to news and reports about the meetings of the U.N., its functional agencies and other international organizations. Its aim is to meet the need for information in compact form about the many

international organizations in which Americans have assumed responsibility.

#### THE TOLL OF ACCIDENTS

The *United States Municipal News*, published weekly by the U. S. Conference of Mayors, on March 1 showed some National Safety Council figures comparing the number of war and accident casualties from Pearl Harbor to V-J Day. Killed in war were 261,608 persons, in home front accidents, 355,000; wounded in war, 651,911, and injured in home front accidents, 36,000,000. The figures, it is said, are presented to emphasize the importance of preventing accidents, not to imply that the fighting front is less dangerous than the home front.

#### SAYING IT WITH PICTURES

The January *News Letter* of the Kansas State Department of Health reproduces a cartoon used on school dental inspection forms, the gist of which is, "Your mouth is your constant servant; take good care of it." A good illustration of the effectiveness that can be achieved with simple line drawings.

#### ANNUAL REPORTS

Metropolitan Health Council (Columbus, Ohio)—A comprehensive summary of a year's doings of an active local health council. One section "A Look into 1946," quotes three of the recommendations of the Gunn-Platt report with the comment that they "should challenge the best thinking of all interested groups." There is also a short report of each of 9 committees. A directory of health services and another of clinics accompany the report.

*Making Health Visible*—Both the annual and the nine year report of the Cleveland Health Museum which effectively summarizes the first nine years of this unique museum. The development of extension services, of the internship system, and of the expanding

influence of the Museum are all illustrated verbally and pictorially. This report punctuates the end of an era for the Museum; in the spring of 1946 it will move into a new and enlarged building with facilities for broader usefulness.

#### TUBERCULOSIS HEALTH EDUCATION

The Tuberculosis Institute of Chicago and Cook County, which is a local organization of the National Tuberculosis Association, sends Credit Lines its recently prepared *Community Forum and Exhibit on Tuberculosis*. Inspired in part by the problem of the returning tuberculous veteran and the difficulty of keeping him under care, this pamphlet outlines a complete program of health education and a health exhibit, giving not only the philosophy behind the program and the needs which it is aimed to meet, but also outlines procedures to be followed in organizing the community, objectives to be met, methods to be employed, content of program, exhibit, and evaluation. All this is done, not by way of theory, but by describing the forum and exhibit and the continuing organization in Cook County under 9 subcommittees.

#### ALCOHOLIC A PUBLIC HEALTH PROBLEM

Two recent items indicate the growing awareness of the alcoholic as a public health problem. The first is a three day institute in chronic alcoholism held in February, 1946, at the University of Minnesota Center for Continuation Study. The faculty of 12 included 6 physicians, among them Dr. Haven Emerson. Others included E. M. Jellinek, Director of the Yale University School of Alcohol Studies, judges and probation officers. Among the topics discussed were the pharmacology and sociology of alcohol, the clinical and psychiatric manifestations of alcoholism, its legal aspects and its social treatment.



The second item is the February, 1946, *Timely Health Topics*, the Bulletin of the Fort Worth-Tarrant County Health Education Committee (Texas), which is devoted entirely to a discussion of alcohol, alcoholism and the alcoholic, and some of the plans for his rehabilitation.

#### BOSTON'S HEALTH UNITS

The expanding interest in health centers across the country will provide a welcome for the newly published review of Boston's Health Units, established from the income of the George Robert White Fund. This booklet describes the buildings and their program and gives the reader a comprehensive idea of the project now almost thirty years old.

Charles F. Wilinsky, M.D., the Deputy Commissioner of Health in charge of health units, and the person whose continued interest has made possible these outstanding health centers in Boston, points out the origin of the project with the opening of the Blossom Street Health Unit in 1916. "In the light of the present belief as to the importance of the health center as a focal and central point for the conduct of health and welfare work on a district level, and in view of the rapid expansion of this development, it may be safely assumed that the planned objectives of almost thirty years ago have in a marked degree been realized. Believing that the seven Health Units, built and equipped by the George Robert White Fund at a cost of approximately three million dollars, are of interest to public health and welfare leaders, it has been decided to bring up to date and to republish this booklet first printed a decade ago. We hope that this description of our health units, how they were established, and the activities carried on, will be of interest and value to its readers."

Public health planners are indebted

to Boston for making this excellent report available. It is highly recommended reading.

#### 25 YEARS OF PUBLIC HEALTH IN CHARLESTON, S. C.

The Charleston (S. C.) County Health Department has recently published a history of its first quarter of a century. Well printed on good paper and extensively illustrated with photographs and charts it is a meaningful record of achievement.

Actually this health department has a much longer history. Although the County Health Department is only 25 years old, Charleston City, whose health work was incorporated in the County Unit ten years ago, had a board of health as early as 1796.

The County Health Department was set up in 1920 following a Public Health Demonstration sponsored by the State Board of Health and the U. S. Public Health Service, and received early financial support from the Rockefeller Foundation. In 1926, the present Health Officer, Dr. Leon Banov, who had served the city department in various capacities since 1913, administered both the city and county units; in 1927 both health units were located under one roof, and in 1936, says the historical report, "It was realized that health problems did not stop at the city limits and that the City and County Health Departments had a common purpose—making a safer, cleaner, healthier, and happier county—and at a great financial saving to the citizens, the two departments merged into the Charleston County Health Department."

Charleston County won honorable mention in the National Health Conservation Contest in all the years between 1932 and 1936 and in 1939, winning first place in 1938.

HOME SAFETY—A CINCINNATI PROGRAM  
Bleecker Marquette sends the follow-

ing story of a home safety educational program organized for the Public Health Federation of Cincinnati by its President, William S. Groom, who is using his experience as an advertising expert to serve as a volunteer health educator on the Federation staff.

"The subject of home accidents presents unusual problems, particularly with respect to a practical and effective means of reaching into all the homes with an educational program.

"In industry, employees are gathered together every working day where they can be readily subjected to a continuing program of accident prevention. Accident hazards can be scientifically studied and mechanical safeguards installed. Working habits of employees can be supervised and safety rules taught and enforced.

"In the case of traffic accidents, drivers of motor vehicles are registered. They can be taught and tested where state laws permit. They can be reached through motor clubs or through their employers if they drive commercial vehicles. They are also subject to supervision and enforcement through the medium of the traffic laws.

"No similar means exist for attacking the problem of accident hazards in the home, where physical conditions and human habits and attitudes cannot readily be studied, supervised or controlled.

"The problem of home accident prevention is made more difficult also because people generally recognize the inherent danger of accidents in industry and traffic but believe that "home is the safest place in the world."

"A further difficulty arises from the fact that elderly people are involved in a high percentage of all fatal accidents in homes and they are not easily influenced or changed in their habits and attitudes.

"Many communities have well organized programs for the control of indus-

trial and traffic accidents, but in view of the greater difficulties in approach to the problem of home accidents it is not surprising that few if any communities have similarly well organized programs in this field.

"Believing it was high time that some organized effort be made to reduce the toll of home accidents in Cincinnati, the Red Cross and the Public Health Federation in coöperation with the Public Safety Department of the city have recently inaugurated an unusual type of educational program.

"In Cincinnati, the city firemen make regular and continuous inspections for fire hazards in homes, factories, business houses, and institutions. It requires about two years to inspect all homes in the city. When each home inspection is completed, the fireman issues a written report and order requesting the correction of fire hazards found.

"The new home accident program provides that the fireman will, at the same time, report on accident hazards in the home, suggest changes or improvements for their elimination, and leave one or two special leaflets prepared for the purpose by the Red Cross.

"One leaflet includes a check list of more than fifty different accident hazards commonly found in homes. It is punched to hang on a nail in the kitchen so that the housekeeper can check the home conditions and habits against it.

"The other leaflet covers the special problem of home accidents among older persons. The fireman asks if there are elderly persons living in the home, and if so he calls attention to the need of extra care and precaution in their behalf, and leaves this leaflet also.

"This program has been so recently started that results may not be expected for some time. Its sponsors believe that the general apathy toward the problem of home accidents cannot be readily overcome through educational measures of the usual kind. They be-

lieve that personal contacts and conversations in the homes are necessary and that some special means of impressing people, such as the fireman's uniform is desirable.

"When the fireman makes an actual inspection in the home and issues orders for the correction of a defective flue for example, it seems reasonable to assume that his advice and literature on home accidents, presented at the same time, will not be so easily disregarded.

"This method of approach offers the means of dramatizing and emphasizing the seriousness and importance of the subject. It seems reasonable to expect a better result by this means than would be possible from mailing the literature or leaving it on the doorstep.

"The program described does not replace other educational work carried on in newspapers, car and bus cards, over the radio, etc. What has been done before will be continued and the new project is in addition thereto."

Sample copies of the two pieces of literature now being used in the new program are available upon request to the Public Health Federation, 312 West 9th Street, Cincinnati 2, Ohio.

#### A RECORD FOR NEW MEMBERS

Beginning on page 561 of this *Journal* is a list of 236 applicants for membership in the American Public Health Association. This group of applicants breaks all previous records for new membership applications received in any one month.

For 70 per cent of these newcomers credit goes to a small group of Association members and Fellows who responded to the request for nominations, for 10 per cent to the affiliated societies and branches, and for 6 per cent to the membership application blank that is carried in the *Journal* each month. Also to the Public Health Education Section and the Public Health Nursing Section for attracting

the largest number of these new members, 40 and 33 respectively, and to the Health Officers, Laboratory, and Engineering Sections which tied for third place with 26 members each.

Credit Lines takes off its hat to these members who have thoughtfully called to the attention of their colleagues the value of the *Journal* and other Association services.

#### WORTH ACQUIRING

*A Good Food Ticket for You*—A folder showing a train in bright green, orange, blue, and yellow carrying three daily meals of milk, fruit, meat, eggs, and all the things that make a good food ticket. Also space for the next appointment to child health conference. Division of Maternal and Child Health, Mississippi State Board of Health, Jackson, Miss.

*As One Board Member to Another*—A highly professional job of outlining a board member's responsibilities by Fern Mosle, who has never held a professional position with a health agency but has been a board member and is currently on the board of directors of the California Tuberculosis and Health Association. It has proved so popular that the supply is limited. Single copies can be furnished at 15 cents each and unlimited permission to reprint is also granted. California Tuberculosis and Health Association, 45 Second Street, San Francisco 5, Calif.

*When You Build or Remodel*—Is an illustrated pamphlet giving safety standards for all aspects of home building, the site, entrance, structural factors, interior planning, storage, electrical installation, plumbing, heating, and fire protection. It is prefaced by the text, "It is a little recognized fact that each year more than 30,000 persons are killed in home accidents and more than 4,500,000 are hurt, crippled, or dis-

abled." Available from National Safety Council, 20 N. Wacker Drive, Chicago 6. The Council also has a bi-monthly *Home Safety Review* that can be had for 5 cents a copy or 25 cents a year.

*Prevent Undulant Fever*—A four page leaflet telling in the simplest terms what undulant fever is and how it can be prevented. Bureau of Health Education, Division of Health, Cleveland, Ohio.

*Open Doors to Children: Extended School Services*—Prepared by Margaret T. Hampel, Consultant on School Services, and Hazel Gabbard, Senior Specialist on Extended School Services of the U. S. Office of Education, this pamphlet "is about the activities of school-age children in centers providing supervised programs planned by teachers, parents, and children." It is a veritable storehouse of suggestions for the opening of manifold doors of interest to the child. Superintendent of Documents, Washington, D. C. 10 cents.

*Program Report, Good Breakfast Week*—The Cereal Institute has made available the report of the activities of Good Breakfast Week, sponsored by the New York CDVO Consumer Services Division, in coöperation with 23 other civic and welfare groups. This

has suggestions for educational materials, breakfast menus, Department of Market broadcasts. Available from Cereal Institute, Inc., 135 South LaSalle Street, Chicago 3.

*Challenge to Community Action*—This pamphlet is the leading item in a package prepared by the Social Protection Division of the Federal Security Agency in its educational program against the further increase of venereal disease infections. It stresses community responsibility and gives practical information on community weapons and making community protection work. Included in the packet also are *Recommendations on Standards for Detention of Juveniles and Adults, Techniques of Law Enforcement in the Use of Policewomen with Special Reference to Social Protection* and a leaflet, *Danger Ahead*. Available from Social Protection Division, Office of Community War Services, Federal Security Agency, Social Security Building, Washington 25, D. C.

*How to Use a Motion Picture*—No. 1 in a "How to Do It Series" of the National Council for Social Studies, 1201-16th Street, N.W., Washington 6, D.C. Others in the series include: "How to Use a Textbook;" "How to Use Local History;" "How to Make a Bulletin Board Effective." 10 cents per copy.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**The Effect of Bombing on Health and Medical Care in Germany—By Morale Division, U. S. Strategic Bombing Survey Medical Branch Report.** Washington, D. C.: War Department, 1945. 388 pp.

Here is a significant report, the first of its kind, which will answer at least some of the many questions Americans in every walk of life were asking as wave after wave of bombers reduced German cities to rubble.

For the public health worker, the physician, the hospital administrator, it is prophetic of what would be facing this country had the gods of war not smiled favorably on us.

Considering the time permitted and difficulties encountered in obtaining and assembling these data, the report is surprisingly inclusive and has the ring of authenticity. For approximately five months and following closely on the heels of Allied liberation troops, thirteen American scientists in medicine and health, seven of whom had studied in German and Austrian universities, worked diligently in carrying out their special assignment.

The book embodies collaborations of on-the-spot analyses of localities chosen on the basis of severity of bombing to the size of the city; on captured enemy records in 24 representative German cities; and by interrogation of German officials and physicians at every level.

Surprising, if not astounding, information is interestingly presented. Examples of pertinent facts divulged: civilians killed in proportion to bombs dropped; prevalent causes of death; why there were no major epidemics in

a battered Germany; medical care afforded civilians; rôle the national diet played in defeating the "master race"; pharmaceutical highlights; psychiatric disorders among regimented civilians; how a large, well organized national and local public health service, aided by the inherent devotion to personal hygiene—and lady luck—helped maintain German health.

The statistical material is well prepared. The report as a whole is studied, conservative, and enlightening. Read it for information or interest.

COURTNEY SMITH

**A Study of Nursing School Health Practices and a Recommended Health Program for Student Nurses—By Burnet M. Davis, Robert H. Felix, Charlotte Silverman and Marion E. Altenderfer.** Washington, D. C.: U. S. Govt. Ptg. Office, 1945. 22 pp. Price, \$.10.

One of the many beneficial results of the establishment of the wartime Cadet Nurse Corps was an investigation of student health programs in schools of nursing, undertaken at the request of the Surgeon General of the U. S. Public Health Service. The resulting recommendations are now available in pamphlet form and outline clearly the school's responsibility for the health and healthful environment of students. The routine for x-ray examinations is especially interesting and important in view of the high incidence of tuberculosis among student nurses and young graduates: positive tuberculin reactors should be x-rayed on entrance, at 6 month intervals, and negative reactors

annually or whenever they become tuberculin-positive. A terminal examination is recommended on graduation. A yearly x-ray examination is recommended for all graduates. Routine x-ray examinations of all hospital admissions is advised as another protection to nurses.

That these as well as the other recommendations are greatly needed was revealed by the findings. In the case of chest x-ray routine, for example, out of 90 schools, only 41 took chest x-ray of all students on admission! Sixty-eight schools repeated chest x-rays annually, five every 6 months and one three times a year. One school x-rayed only selected cases every year!

Public health nursing agencies accepting student nurses for field experience should be familiar with this survey and its recommendations.

DOROTHY DEMING

**White Versus Brown Flour—***By F. L. Dunlap, Sc.D. Newark, N. J.: Wallace & Tiernan Co., Inc., 1945. 272 pp.*

The twelve chapters take the reader from "The Grist Great Grandad Ground" in Chapter 1, through Chapters 5 and 6 "Nutritional Characteristics of White and Brown Flour" to Chapter 12 "The Amino Acids in Nutrition." There are also chapters on the phytic acid and enrichment problems. In the foreword of the book C. K. Michener states:

"Coming into first prominence with the fiery brown bread crusading of the Rev. Sylvester Graham, the white versus whole wheat flour controversy has troubled the bread-eating world for about 100 years. The contention has not yet come to an end, even in this country where enriched white flour has received scientific and public acceptance. Wartime necessities unassociated with nutrition have delayed a decision in other countries, notably Great

Britain, which was first to propose bread enrichment, or fortification, with vitamins and minerals. Dr. Dunlap's work, in consequence, is by no means outdated or outdistanced by events. He deals with what may continue for some time longer to be a debatable question."

The monograph is based on a survey of the literature (336 references); no new data are presented. While leaning to the "white flour" side of the argument, Dr. Dunlap has kept the work free from contention and argument. The entire nutritional aspects of wheat milling and flour are ably stated and clearly analyzed.

The evidence presented on phytic acid and the continued use of high extraction flours in Europe points clearly to restricted calcium and iron utilization in brown flours. Enrichment of white flour with minerals and vitamins is considered to be a sound practice.

In spite of a 50 year old educational campaign in favor of whole wheat bread, and free-choice purchases, the American public still overwhelmingly prefers white bread. In the words of the author—"All too long, wheat flour has been emphasized for its energy producing qualities. Wheat flour can and does contribute in no inconsiderate fashion to our protein requirements."

CARL R. FELLERS

**Life and Health—***By Charles C. Wilson, M.D., John L. Bracken, M.A., and John C. Almack, Ph.D. New York: Bobbs-Merrill, 1945. 547 pp. Price, \$2.12.*

This book has been prepared for use of high school students in health education courses. Health problems are approached from the students' point of view and related to their everyday interests and experiences. The text is written in a frank and straightforward style, and many attractive illustrations are used to supplement it. The ma-

terial has been carefully selected with attention focused on the maintenance of a healthy personality.

The twenty-four chapters in the book are organized into eight parts. It will be noted that the problems discussed are of particular significance today. They are: Your Way of Life, Nutrition for Health and Fitness, Vigor and Strength, As Others See You, You're in Command, Man Against Disease, Modern Safety and First Aid, and Together in Health.

The authors have taken great care in presenting facts that are accurate and up-to-date. This book should be very useful in high school health education programs. VIVIAN V. DRENCKHAHN

**A Future for Preventive Medicine**  
—By Edward J. Stieglitz, M.D., F.A.C.P. New York: Commonwealth Fund, 1945. 77 pp. Price, \$1.00.

This book brings into concrete focus the more recent thinking in the field of preventive medicine. The author properly points out that we must continue our work in the conquest of epidemic diseases, but we must also increasingly concern ourselves with the noninfective diseases of senescence. These are taking an increasing toll of life and ill health as our population grows gradually older. Even though our knowledge of the degenerative diseases is still meager, enough is already known, if applied, to mitigate many of the diseases of old age which are not preventable.

Stieglitz emphasizes that health is a privilege and not a right; that the greatest possible well-being for the individual is only obtainable by personal diagnostic study. As each person necessarily presents specific, individual problems, the mass approach will not suffice. With this concept one certainly cannot quarrel, nor with the idea that prolonged and effective education to seek such care is necessary. The

author, however, dismisses the element of cost in altogether too few words. With a large segment of our population normally unable to pay even for curative care, certainly the question of how people can pay for such personalized supervision as we all feel is necessary merits more consideration than he gives it. Until this question can be answered more satisfactorily, much that the author advocates can never be put into practice for the great majority of people.

The book is distinctly worth reading by everyone in the field of public health. It gives us a glimpse into some of the problems of the future and the coming changes in emphasis in our health programs. It will help us to orient our thinking toward the problems to which we have given little thought. If we are to meet the challenge of the future, we must place more and more emphasis on the preventive aspects of noninfectious diseases in an ageing population. LLOYD FLORIO

**Tuberculosis Hospital. 200 Bed Capacity—Plans prepared under the direction of Committee on Sanatorium Planning and Construction.** New York: American Trudeau Society: National Tuberculosis Association, 1945. 10 pp. Price, \$2.50. Copies may be purchased through the National Tuberculosis Association.

This 11 x 15 inch booklet consists of an elevation of the hospital, a plot plan, three pages of text and five of floor plans drawn to scale. A discussion of the development of sanatoria indicates the basis for a vertical type of hospital after which departmental requirements are fully reviewed since these form the logical basis for designing a physical plant. The booklet will be of value as a starting point in planning a hospital of this type, but—very careful consideration of the details and of the space distribution and modifica-

tion to meet a specific situation will be required. There are many points needing further study—for example (1) there is no Record Room, (2) the fluoroscope adjacent to the operating room is not available for stretcher patients. N. STANLEY LINCOLN

*The Chemistry and Technology of Food and Food Products—Edited by Morris B. Jacobs, Ph.D. Vol. I, XV, 951 pp. Vol. II, XX, 890 pp. New York: Interscience Publishers, Inc., 1944. Price, \$19.00.*

These two monumental volumes contain forty-eight chapters, each written by a competent authority. The book is not an up-to-date replica of König's classic compilation, neither does it give the food chemist recent up-to-date and concise methods of analysis. A person thoroughly familiar with any one of the many different subjects so well presented may find that the specific chapter in question is slightly superficial and lacking in detail, yet if he peruses the other chapters upon subjects with which he is not an expert, he will find each one extremely interesting as well as instructive and accurate.

The references to the literature quoted show careful study of recent publications in the science journals. The chapter on vitamins, for example, gives references to thirty-eight publications between 1931 and 1942, the median year being 1939. This vitamin chapter is worthy of extensive study, since it contains the structural formula, physical characteristics, statements relative to stability and biological activity of fourteen groups.

For those interested in the physical aspects of food, a study of the chapter on Kinetics of Enzyme Reaction is recommended, and there are but few who cannot absorb considerable valuable information from the forty-eight page chapter upon Amino Acids and Proteins.

Among the unusually interesting chapters upon food technology are those pertaining to cereal grains, baking, alcoholic beverages, meat products and fish. The chapter on fish, written by one thoroughly familiar with the subject, carries a picture of the fishing fleet at Gloucester, Mass., which is so natural that one instinctively smells trimethylamine as soon as the page is turned.

All persons engaged in technological work pertaining to foods will enjoy the book and most certainly can absorb something of advantage in their business. Each volume is well indexed, the press work is excellent as are also the paper and the binding.

HERMANN C. LYTHGÖE

*Community Organization for Social Welfare—By Wayne McMillen. Chicago: University of Chicago Press, 1945. 658 pp. Price, \$4.75.*

This well organized and well documented discussion for social welfare is primarily for teachers and for beginners in social welfare work. Mr. McMillen has rendered a valuable service in bringing together a vast amount of data and a thoughtful interpretation based on his own broad experience in this field. The volume will be of great value, to all engaged in any form of community organization activities.

Mr. McMillen uses two approaches to the problem: Procedures used by practitioners in this field and knowledge of the psychology of groups.

The author definitely rejects the doctrine of determinism. He believes firmly that trends can be directed and social conditions modified. He sees the aim of the community organization process as bringing about and maintaining more effective adjustment between social welfare resources and social welfare needs. This involves discovery of needs and elimination and prevention of social needs and disabilities as far



as possible. A sound social structure and such preventive measures should mean fewer people needing individual social services.

If references were made to the social unit experiment in Cincinnati conducted back in 1915 to 1918, or to the plan of organization in Chicago's Back of the Yards District, they escaped my notice. Community organization for health is not discussed.

The last chapter, "The Decades Ahead," gives an appalling picture of social services in 1894 as described by Amos Warner. Perhaps we need to compare what is now with what existed even so recently in the past to realize that we have made substantial progress in spite of our present-day lacks. Mr. McMillen gives Community Chests and Councils and social agencies some of the credit for the improvements that have taken place.

BLEECKER MARQUETTE

*Hygiene*—By J. R. Currie, M.D., and A. G. Mearns, M.D. (2nd ed.) Baltimore: Williams & Wilkins, 1945. 432 pp., illus. Price, \$6.00.

The authors have addressed this book to students of medicine, practitioners, public health officials and social workers as a volume to provide orientation and familiarity with the fields of public health work.

As members of the public health faculty at the University of Glasgow, Scotland, they can speak with authority in presenting the views accepted in Great Britain. Accordingly, their book is of particular interest to people in the Americas who wish to have advance knowledge of opinions and practice before going to England, or who may wish to make comparisons with procedures to which they are accustomed at home.

Both American and English research literature has been well utilized, but reference to official legislation and

sanitary codes is limited to those of the United Kingdom. For this reason the book can be recommended only as supplementary reading for students and sanitarians in America and Canada.

An excellent opening chapter on Inheritance provides good background at the beginning, and the chapters on Maternity and Child Welfare, Mental Hygiene, Social Insurance, and on Housing clearly present the strong side of British public health philosophy. The two chapters on Community Diseases and Infestation, however, seem very poorly organized, consuming one-fourth of the book in descriptions of symptoms and etiology of unrelated diseases listed alphabetically. Regrouping by methods of control and leaving detailed descriptions to the specialized texts on parasitology and medical diagnosis, would have saved space for more complete treatment of the chapters on environmental sanitation and public health administration.

Ventilation, "warning" (good term), and lighting are considered very superficially with no mention of the underlying physiological principles. Of the discussion on food sanitation, Americans would feel that too much faith is placed in meat inspection, that the case for pasteurization is urged very mildly, and that restaurant sanitation is ignored. It may be that the reason for this bias, which is typical of European countries, lies in the fact that it is so difficult to change business and living habits based on centuries of custom. Officials there tend to look on community health education as Americans know it, as a very up-hill job, and this fact shows up clearly in the text.

PHILIP E. NELBACH

*Jobs and the Man*—By Luther E. Woodward, Ph.D., and Thomas A. C. Rennie, M.D. Springfield, Ill.: Thomas, 1945. 132 pp. Price, \$2.00. Published at a critical time when

many millions of men and women return to civilian life and seek peacetime jobs, this little volume attempts to reach chiefly employers, supervisors, interviewers, counselors, foremen, and shop stewards in industry and smaller business "to deepen their understanding and consistently to improve their techniques of handling their fellow men."

The importance of emotional balance for satisfactory work performance and the fact that placement in the right job is almost essential for emotional balance is the leading motive of the book. Five out of seven chapters deal specifically with the problems of returning veterans whose speedy adjustment is essential because "... at best the public's remembrance of its heroes will be relatively short." Illustrated by impressive case histories, the chief differences between military and civilian life and the difficulties of adjustment to home-life, old and new working conditions are explained. An important part of the discussion is devoted to the veteran "who comes back nervous." The signs, symptoms, and mechanism of psychoneurosis as a "respectable disorder" and the desirable attitude toward men thus affected are clearly outlined. Practical hints on interviewing and counseling should be a valuable aid for those untrained in these techniques. As a long-term view, the need for preventive mental hygiene programs on a large scale in industry is emphasized. FRANZISKA W. RACKER

**Group Health Insurance and Sickness Benefit Plans in Collective Bargaining**—By *Helen Baker and Dorothy Dahl*. Princeton, N. J.: Princeton University Press, 1945. 89 pp. Price, \$1.50.

This "survey of the impact of collective bargaining on provisions for sickness benefits for industrial employees . . . was restricted to programs which provide, as a central core, weekly cash benefits for temporary disability." Information was obtained about "more than 44 sick benefit programs established through agreements with employer associations, and more than 230 included in agreements with individual companies."

The authors outline in considerable detail plans developed through collective bargaining and the major policies and problems involved. The viewpoints of unions, employers, and insurance carriers are quoted, and the advantages and disadvantages of union and employer administration of benefits are pointed out.

This inclusion of sick benefits in union contracts has been almost entirely a wartime development. Its post-war growth is likely to be affected by developments in health insurance legislation.

Everyone interested in health insurance plans will find the first hand information contained in this report of value for the light it throws upon an important social experiment.

MARGARET LOVELL PLUMLEY

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

- AIR POLLUTION IN NEW YORK CITY.** Report of New York City Air Pollution Survey, 1936-1937. By Arthur C. Stern, M.E., Leon Buchbinder, Ph.D., Jac Siegel, B.S., and others. New York: Department of Health, 1945. 28 pp.
- BOSTON'S HEALTH UNITS.** Established from the Income of the George Robert White Fund, 1924-1944. Boston: Department of Health, 1945. 50 pp.
- A COMMUNITY PROJECT REPORT ON THE BETTER BREAKFAST CAMPAIGN OF BRIDGEPORT, CONNECTICUT.** Sponsored by the Community Nutrition Committee of the Bridgeport Community Chest. Bridgeport: Community Nutrition Committee, 1946. 143 pp.
- THE CRIME OF IMPRISONMENT.** By George Bernard Shaw. New York: Philosophical Library, 1946. 125 pp. Price, \$2.00.
- DOCTORS, DRUGS AND STEEL.** The Story of Medicine's Battle Against Death. By Edward Podolsky, M.D. New York: Bernard Ackerman, 1946. 384 pp. 20 illus. Price, \$3.75.
- ETHICS FOR MODERN NURSES.** Professional Adjustments 1. By Katharine J. Densford, R.N., and Millard S. Everett, Ph.D. Philadelphia: Saunders, 1946. 260 pp. Price, \$1.75.
- THE EXECUTIVE IN ACTION.** By Marshall E. Dimook. New York: Harper, 1945. Price, \$3.00.
- FACTS ABOUT CHILD HEALTH.** U. S. Department of Labor, Children's Bureau. Washington, D. C. Govt. Ptg. Office, 1946, 31 pp. Price, \$1.00.
- FLUORINE IN UNITED STATES WATER SUPPLIES.** By Anastasia Van Burkalow. Reprinted from the *Geographical Review*, Vol. XXXVI, No. 2, 1946. New York: American Geographical Society, 1946. 16 pp.
- FOOD AND NUTRITION.** Prepared under direction of Division of Elementary Education, State Department of Education. Sacramento: State Department of Education, 1945. 160 pp.
- HEALTHFUL HOUSING FOR THE TERRITORY OF HAWAII.** Recommendations of the Subcommittee on Healthful Housing, Committee on Sanitation. Honolulu: Chamber of Commerce, 1946. 29 pp.
- HOW TO KEEP YOUR FAMILY HEALTHY.** A Family Guide to Better-Health. Compiled by the Editors of *Look*. New York: Franklin Watts, Inc., 1946. 95 pp. Price, \$1.00.
- LIFE, I SALUTE YOU.** By Boris Kader. Cambridge: Sci-Art Publishers, 1945. 368 pp. Price, \$3.00.
- MANUAL FOR WATER PLANT OPERATORS.** By A. A. Hirsch. Brooklyn: Chemical Publishing Co., 1945. 368 pp. Price, \$6.50.
- MEDICINE IN INDUSTRY.** By Bernhard J. Stern, Ph.D. New York: Commonwealth Fund, 1946. 209 pp. Price, \$1.50.
- NOMENCLATURE OF PATHOGENIC AND PARASITIC ORGANISMS.** Hartford: State Department of Health, 1945. 66 pp. Free from State Dept. of Health, Hartford, Conn.
- NURSING AND NURSING EDUCATION.** By Agnes Gelinas, R.N. New York: Commonwealth Fund, 1946. 72 pp. Price, \$1.00.
- NURSING IN COMMERCE AND INDUSTRY.** By Bethel J. McGrath, R.N. New York: Commonwealth Fund, 1946. 356 pp. Price, \$3.00.
- PHYSICIANS' AND DENTISTS' ASSISTANTS.** The Outlook for Women in Occupations in the Medical and Other Health Services. Women's Bureau, U. S. Department of Labor. Washington, D. C.: Govt. Ptg. Office, 1946. Bulletin 203, No. 11. 15 pp. Price, \$1.00.
- PREVENTION, FIRST AID AND EMERGENCIES.** By Lyla M. Olson, R.N. Philadelphia: Saunders, 1946. 591 pp. 173 illus. Price, \$3.00.
- THE PROGRESS OF MEDICAL GEOGRAPHY.** By Richard Upjohn Light. A Proposed Atlas of Diseases. By J. K. Wright. Reprinted from the *Geographical Review*, Vol. XXXIV, No. 4, 1944. New York: American Geographical Society, 1946. 18 pp.
- PSYCHOANALYTIC THERAPY.** Principles and Application. By Franz Alexander, M.D., and Thomas Morton French, M.D. New York: Ronald Press, 1946. 353 pp. Price, \$5.00.
- PUBLIC HEALTH NURSING IN CANADA.** Principles and Practice. By Florence H. M. Emory. Toronto: Macmillan, 1945. 554 pp. Price, \$3.00.
- REHABILITATION AT LAKE TOMAHAWK STATE**

CAMP. A History. By Harold Holand. New York: National Tuberculosis Association, 1945. 46 pp.

REPORT OF THE FIRST SESSION OF THE CONFERENCE HELD AT THE CITY OF QUEBEC, CANADA, OCTOBER 16 TO NOVEMBER 1, 1945. Food and Agriculture Organization of the United Nations. Washington, D. C.: Food and Agriculture Organization of the United Nations, 1946. 89 pp.

A TEXTBOOK OF BACTERIOLOGY AND IMMUNOLOGY. By Joseph M. Dougherty, Ph.D., and Anthony J. Lamberti, M.S. St. Louis: Mosby, 1946. 360 pp. 102 illus. Price, \$4.50.

THIRTY-THIRD ANNUAL REPORT OF THE SEC-

RETARY OF LABOR, or the Fiscal Year  
Washington, D. C.:  
Ended June 30, 1945. 31 pp. Price, \$10.  
Govt. Ptg. Office,  
TUBERCULOSIS REFERENCE STATISTICAL YEAR-  
BOOK FOR 1944. A comparative sum-  
maries for 1943, a five-year period 1940-  
1944. New York: N. Y. Tuberculosis and  
Health Assn., 40 pp. Free from  
publisher, 386 Avenue, New York,  
N. Y.  
UROLOGICAL NUTRITION. By David M. Davis,  
M.D. 4th ed. Philadelphia: Saunders,  
1946. 212 pp. illus. Price, \$2.25.  
UNITED STATES SERVICE HOSPITAL  
CORPS SCHOOL ANNUAL. Washington,  
D. C.: Govt. Office, 1946. 509 pp.

## A SELECTED PUBLIC HEALTH INQUIRY WITH ANNOTATIONS

RAYMOND S. PATTERSON, Ph.D.

Best Possible Community Health Services—In Illinois, the State Medical Society gives a hearty shove to the progressing state coverage with county health departments. Though some hypersuspicious local doctors may fear the growing number of county units as just so much more "state medicine," their journal assures them that public health and socialized medicine are never synonymous.

ANON. County Health Departments. Illinois Med. J. 89:1 (Jan.), 1946.

That Tired Word: Coöperation!—Whenever educators state the objectives of public schooling they put health at the head of the list. That this will be not just a "tinkling cymbal," Wayne County, Michigan, worked out a coöperative venture between the schools and the health department. A little of what is being done is told here.

BRAKE, C. E. School Health: Whose Job Is It? Pub. Health Nurs. 32, 2:66 (Feb.), 1946.

From Stoke-On-Trent—Elementary and secondary school children,

1,620 in all were divided into two equal groups, one received supplementary vitamin B<sub>12</sub>, the other placebos. The effect on growth, strength, endurance, fatigue, absence or severity of clinical condition, the children had an average of 100% of the recommended low amount of the supplements to and fat improvements makes these cause a wonder about a lot of things.

BRANS, E. R., et al. Effect of a Daily Vitamin Supplement on the Health and Development of Children. Brit. M. J. 4440, 193 (Feb. 9), 1946.

I Am in This Fellow's Corner—It seems we have been scared into believing that a glass of raw milk is an invitation to the hospital. Brucellosis, enteritis, et al., are taking the places once held by tuberculosis and typhoid fever. John Q. Public is told by those who should know better, or by those who don't

care to know better that raw milk is *always* dangerous and pasteurized milk is *always* safe. Neither of these statements is true, says his professor who takes up the cudgel again for certified milk. He knocks heads right and left.

BROWN, J. H. Why Certified Milk? *Am. J. M. Sc.* 211, 2:144 (Feb., 1946).

**Like the Poor: Allergies With Us**—In some region of the United States, poliomyelitis is epidemic nearly every year. High incidence usually extends over a two year period. In a house-to-house canvass, it was found that 5.7 per 1,000 living children 5-19 years old had had a history of polio at some time. This is but a small sample of the statistical gold in the hills of this study.

COLLINS, S. D. The Incidence of Poliomyelitis and Its Crippling Effects as Recorded in Family Surveys. *Pub. Health Rep.* 61, 10:327 (Mar. 8), 1946.

**The Ever-Waiting Staphylococcus**—They called it "pineapple trifle" but never was dessert so hideously misnamed. In a Canadian restaurant—well above the average in sanitary condition and practices—the cooks stole a pudding of left-over cake, milk, starch and what-not, then allowed it to incubate for 18 hours at room temperature. You know the rest!

DOYLE, H. S. An Outbreak of Food Poisoning in Prince Albert, Saskatchewan. *Canad. Pub. Health J.* 37, 2:65 (Feb., 1946).

**Thirteen Years of X-Raying**—In every four New Yorkers has had his chest x-ray picture taken. The proportion increases annually. This huge job was done and written means to present-day administrative practices constitutes a most interesting study.

EDWARDS, H. R. The X-Ray and Health. *New York State J. Med.* 46, (Mar. 1). 1946.

**Thus Spake Zarathustra**—"Better know nothing than half-know many things." I had assumed it was all settled that equine encephalitis was passed on from sick horses to their two-legged associates—whether farmers or chickens—by mosquitoes! Now comes an epidemiologic study of the Minnesota outbreak which concludes that no evidence was uncovered to implicate domestic animals as the cause of human cases. Verily, Zarathustra, you spake a mouthfull!

EKLUND, C. M. Human Encephalitis of the Western Equine Type in Minnesota in 1941: Clinical and Epidemiological Study of Serologically Positive Cases. *Am. J. Hyg.* 43, 2:171 (Mar.), 1946.

**"Where We Differ"**—Here is a procedure we could stand more of. At their weekly get-together, the supervisors, *et al.* of the New Haven V. N. A. took apart Mountin's *The Future of Public Health Nursing* (previously published) and put it together again more to their own liking. The report upon the operation makes stimulating reading.

FOX, E. G. And It's an Exciting Future! *Pub. Health Nurs.* 38, 2:51 (Feb.), 1946.

**Good News for Syphilitics**—Penicillin seems to be living up to its early promise in the treatment of syphilis. That is enough for the run-of-the-mill health worker to remember. Syphilologists will, of course, have studied this symposium, coming as it does from a galaxy of scientist-stars of the first magnitude.

FRAZIER, C. N., and FRIEDEN, E. H. Action of Penicillin, Especially on *Treponema pallidum* (and five related papers). *J.A.M.A.* 130, 11:677 (Mar. 16), 1946.

**They Said They'd Read More V. D. Pamphlets**—By means of a questionnaire, 3,000 enlisted men were asked what they thought of the Army's V. D. educational effort. Less than

half had ever had any pre-service sex education. Most of them paid attention, and most thought the program worth while. Seventy per cent worried less about possible infection because of improved treatment methods.

GETZOFF, P. L. Factors Affecting Response to Venereal Disease Education. *J. Soc. Hyg.* 32, 1:22 (Jan.), 1946.

**Promise of Things To Come—**Major objectives of the Division of Tuberculosis, U.S.P.H.S.—case-finding, medical care, rehabilitation, and public assistance for families—are to be reported upon in succeeding first-of-the-month issues of *Public Health Reports*. The introductory paper is about the growing pains of the rehabilitation program. It is well that this subject is put out in front, for only one in ten of the tuberculous in need of counselling and aftercare is getting it. There is precious little agreement about what rehabilitation is, or who is to receive it, or who is to give it. But whatever it is, it and all its collateral manifestations—sheltered shops, colonies, home-bound employment, and the like—are badly in need of organization into one overall program under the direction of state officials (a program to be detailed, presumably, in later issues).

HILLEBOE, H. E., and KIEFFER, N. C. Rehabilitation and Aftercare in Tuberculosis. *Pub. Health Rep.* 61, 9:285 (Mar. 1), 1946.

**Wartime Mobile Clinics—**"One important item of equipment in the children's eyes was a big jar of sweets . . ." That quote (untouched by us) tells how the children of Islington Borough in London were saved from diphtheria. Anguished psychologists hereabouts may dry their tears on this absorptive annotative sleeve—for 80 per cent immunization was achieved in all the wartime confusion.

HIRST, K. M. Fighting Childhood's Foe. *Canad. Pub. Health J.* 37, 2:77 (Feb.), 1946.

**Yard-Stick for Slums or Garden Suburbs—**Our Committee on Hygiene of Housing issued an appraisal method for measuring the quality of housing and the Health Commissioner of Milwaukee put it to work in his home town—to good effect apparently. He reports that it will have a profound influence in determining future public policy in housing and city planning. Maybe you, too, might employ this device with equal satisfaction.

KRUMBIEGEL, E. R. An Appraisal Method for Housing Conditions and Needs. *The Municipality.* 40, 12:259 (Dec.), 1945.

**Persistence of the Primitive—**Just to complicate the health worker's hours of ease, a number of new scientific publications have made their appearance since our so-called peace raised its threatening head. The latest is a promising addition to our friendly competitors, and one of especial value for those of us who have an itch to write. They will find in Vol. 1, No. 1, a rich vein of source material about all the nauseous messes (in the pharmacopoeia of the ancients) that were the natural parents of our sera, hormones, and organ-extracts.

MACKINNEY, L. C. Animal Substances in *Materia Medica.* *J. Hist. of Med.* 1, 1:149 (Jan.), 1946.

**And No Complaints from Users—**Oil-in-water emulsions (by which mineral oil may be impregnated in blankets) really do make dust-laying a practical procedure, say these writers. The emulsions are non-irritating and can be applied in ordinary laundry processes. Neither bactericidal substances alone nor water-soluble dust laying agents are as good as mineral oil.

PUCK, T. T., *et al.* The Oil Treatment of Bedclothes for the Control of Dust-Borne Infection (and two related papers). *Am. J. Hyg.* 43, 2:91 (Mar.), 1946.

**The Tick of the Dog That Loves You—Dogs** living close to human cases of spotted fever were found to have sera with high titers. Though the findings of this study suggest more than a casual relation between canine and human cases, more must be learned about the epidemiology of the disease before all the questions can be answered.

SHEPARD, C. C., and TOPPING, N. H. Rocky Mountain Spotted Fever. *J. Infect Dis.* 78, 1 63 (Jan.-Feb.), 1946.

**Canadian Military Experience With V. D.—**Was our educational program worth the effort we put into

it? Probably so, these writers agree, a bit dubiously. But, they conclude, education had little effect on the character faults that underlie the problem. The one practical lesson of war experience, they assert, is that active case finding by local health departments offers the best assurance of success in any V. D. program. As it happens, your annotator, John-the-Baptist-like, preached this in the wilderness twenty years ago (*A.J.P.H.*, 18:8), and he takes this occasion to add a fervent amen to the finding.

TICE, J. W., *et al.* Some Observations on Venereal Disease Control in the Royal Canadian Air Force. *Canad. Pub. Health J.* 37, 2:43 (Feb.), 1946.

Best Sellers in the Book Service for April

The Control of Communicable Diseases. American Public Health Association. 6th ed., 1945 .....	\$ .35
Diagnostic Procedures and Reagents. American Public Health Association. 2nd ed., 1945 .....	4.00
Government in Public Health. Harry S. Mustard, M.D., 1945.....	1.50
Local Health Units for the Nation. Haven Emerson, M D., 1945.....	1.25
Municipal and Rural Sanitation. Ehlers and Steel, 1943.....	4.00
Occupational Lead Exposure and Lead Poisoning, 1943.....	.75
Recommended Practices for Design, Equipment and Operation of Swimming Pools and Other Public Bathing Places. 1942.....	.50
Standard Methods for the Examination of Dairy Products. American Public Health Association 8th ed, 1941.....paper	1.75
Voluntary Health Agencies An Interpretive Study. Selskar M. Gunn and Philip S. Platt, Ph D., 1945.....	3.00

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AMERICAN PUBLIC HEALTH ASSOCIATION

## ASSOCIATION NEWS

### SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 12-14

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*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

##### *Health Officers Section*

Amyntor Virgolino de Amaral-Basto, M.D.,  
Caixa Postal 621, Belem, Estado do Para,  
Brazil, S. A., Director, Para Sector,  
Amazon Program, Servico Especial de  
Saude Publica

Wilfrid I. Bent, M.D., D.P.H., Dept. of Pub-  
lic Health, Princess Bldg., Yarmouth, Nova  
Scotia, District Medical Officer of Health

Reggie C. Bourret, M.D., C.M., Coahoma  
County Health Dept., Clarksdale, Miss.,  
Director

Edgar T. Braga, M.D., 55 Shattuck St.,  
Boston 15, Mass., District Health Officer,  
Public Health Dept., Rio de Janeiro, Brazil

Lamar A. Byers, M.D., M.P.H., Box 157,  
Paris, Tex., Director, Paris-Lamar County  
Health Unit

Nathaniel H. Cooper, M.D., 224 W. Michigan  
Ave., Marshall, Mich., Asst. Director, Cal-  
houn County Health Dept.

Paul J. Coughlin, M.D., Box 1117, Talla-  
hassee, Fla., Director, Leon County Health  
Dept.

Alberto Elias-Carneiro, M.D., M.P.H., 600  
W. 168th St., New York 32, N. Y., Chief  
Physician, State Health Dept., Porto Alegre,  
Rio Grande do Sul, Brazil

Albert D. Foster, M.D., City Bldg., 389  
Congress St., Portland, Me., City Health  
Officer

Claude W. Gillette, M.D., 110 Charles St.,  
Saugatuck, Conn., Health Officer, Westport,  
Conn.

Thomas R. Hood, M.D., 106½ East 9th,  
Winfield, Kans., Cowley County Health  
Officer

David V. Hudson, M.D., 1759 South Victor,  
Tulsa 4, Okla., Director, Tulsa Cooperative  
Clinic, State Health Dept.

Edwin D. Lyman, M.D., 1641 S. 21st St.,  
Lincoln, Nebr., City Physician, Lincoln  
City Health Dept.

Dr. Wilson da Mota-Silveira, 216 N. State  
St., Ann Arbor, Mich., Asst. to Director,  
Servico Especial de Saude Publica, Brazil

William L. Potts, M.D., Franklin County  
Tuberculosis Hospital, Columbus 7, Ohio,  
Medical Director

Oscar C. Powers, M.D., D.P.H., Court House,  
Woodstock, Ontario, Canada, Medical  
Officer of Health, Oxford County Health  
Unit

Thurlow W. Reed, M.D., 803 N. Palafox St.,  
Pensacola, Fla., Director, Escambia County  
Health Dept.

J-B. Liguori Richard, M.D., D.P.H., 75 Water  
St., Campbellton, N. B., Canada, District  
Medical Health Officer

W. John Rothrock, Jr., M.D., 212 Shawnee  
Trail, Chattanooga, Tenn., Director, Tuber-  
culosis Control, Chattanooga-Hamilton  
County Health Dept.

Robert R. Scott, M.D., City Hall, Ludington,  
Mich., Director, Mason County Health  
Dept.

Arthur McK. Shelamer, M.D., M.P.H., Madi-  
son County Health Dept., Huntsville, Ala.,  
County Health Officer

Sam Sparhawk, M.D., Box 706, Chehalis,  
Wash., District Health Officer, Lewis-  
Pacific District Dept. of Health

Charles F. Sutton, M.D., 216½ E. Monroe  
St., Springfield, Ill., Asst. Chief, Div. of  
Local Health Admin., Illinois Dept. of  
Public Health

George W. Walden, M.D., Lincoln County  
Health Dept., West Hamlin, W. Va., County  
Health Officer

E. Richard Weinerman, M.D., 2702 Allison



St., Mt. Ranier, Md., Asst. to Chief Medical Officer, Health Services Div., Farm Security Admin.  
 James H. Wells, M.D., Courthouse, Sebring, Fla., Health Officer. Highlands-Glades Counties

### *Laboratory Section*

Karl R. Bailey, M.D., Health Dept., Boston 14, Mass., Deputy Commissioner in charge of Bacteriological Laboratory  
 Mary B. Ballard, 1856 Kendale, Memphis, Tenn., Laboratory Technician, U. S. Public Health Service  
 Charlotte C. Campbell, 1875 Mintwood Place, Washington 9, D. C., Asst. Bacteriologist, Army Medical School  
 Kenneth W. Clarke, 4522 N. Gove St., Tacoma 7, Wash., Sanitarian, City Health Dept.  
 James R. Copeland, M.A., State Dept. of Health, Branch Laboratory, Elkton, Md., Assoc. Bacteriologist, State Health Dept.  
 Frances M. Ewing, 342 Angelus, Memphis, Tenn., Medical Technician, U. S. Public Health Service  
 Wallace L. Faust, Jr., 5100 "U" St., S.E., Washington 19, D. C., Medical Technician, Army Medical Center, Army Medical School  
 Lt. Myron W. Fisher, Sn.C., Officers Section, Fitzsimons General Hospital, Denver 8, Colo., Officer in charge of Bacteriology and Mycology.  
 Florence V. Goedert, 642 Madison Ave., Helena, Mont., Junior Bacteriologist and Serologist, State Board of Health  
 Irving Gordon, M.D., Commission on Acute Respiratory Diseases, Regional Hospital, Sect. 2, Fort Bragg, N. C., Senior Medical Bacteriologist, Div. of Labs. and Research, N. Y. State Health Dept.  
 Jose Guilherme-Lacorte, M.D., Instituto Oswaldo Cruz, Rio de Janeiro, Brazil, S. A., Chief, Virus Section and Professor in School of Public Health  
 Patricia R. Haugh, 3911 Juniper Rd., Baltimore 18, Md., Senior Asst. Bacteriologist, State Dept. of Health  
 Vera Kreekis, 651 Duncan, San Francisco 14, Calif., Bacteriologist, Hooper Foundation for Medical Research.  
 Carl J. Lang, 3042 Bainbridge Ave., New York 67, N. Y., Chemist, Vitamin Corp. of America  
 John K. Miller, M.D., 302 Washington Ave., Albany, N. Y., Assoc. Medical Bacteriologist, Div. of Labs. and Research, New York State Dept. of Health  
 Sylvia G. Moses, M.A., 2212 E. Hoffman St.,

Baltimore, Md., Assoc. Bacteriologist, State Dept. of Health  
 Louis F. Ortenzio, 3603 43rd Ave., Colmar Manor, Md., Bacteriologist, U. S. Food and Drug Admin.  
 Gloria Osofsky, 1241 N. Fairfax Ave., Los Angeles 46, Calif., Student in Bacteriology, Univ. of California at Los Angeles  
 Lenore R. Peizer, 506 Ft. Washington Ave., New York 33, N. Y., Bacteriologist, Bureau of Laboratories, City Health Department.  
 Manuel E. Pichardo-Sarda, M.D., 4 Trinitaria St., Ciudad Trujillo, D. R., Student, Johns Hopkins School of Hygiene and Public Health  
 Miriam E. Richardson, 2411 N. Charles St., Baltimore 18, Md., Senior Asst. Bacteriologist, State Dept. of Health  
 Paul A. Rohde, 2411 N. Charles St., Baltimore 18, Md., Assoc. Bacteriologist, Bureau of Bacteriology, State Dept. of Health  
 David Scherr, 1502 Rosedale St., Baltimore 16, Md., Bacteriologist, State Health Dept.  
 Charlotte L. Taw, 25 Keswick Ave., Pittsburgh 2, Pa., Medical Technologist  
 Morris W. Wilson, M.D., Wind River Indian Hospital, Fort Washakie, Wyo., P.A. Surgeon, (R), U. S. Public Health Service  
 Helena L. Wolfe, 25½ S. Rodney, Helena, Mont., Bacteriologist, State Board of Health

### *Vital Statistics Section*

Manuel A. Agurto, C., M.D., Prolongacion Lucanas 241, Lima, Peru, S. A., Student, Columbia University, School of Public Health  
 Edith M. Boyd, 1790 Broadway, A.P.H.A., New York 19, N. Y., Assoc. Secretary, Committee on Administrative Practice, American Public Health Assn.  
 Miriam Milholland, 939 Eddy St., Apt. 7, San Francisco 9, Calif., Junior Public Health Analyst, State Dept. of Public Health  
 John B. Pastore, M.D., 370 Lexington Ave., New York 17, N. Y., Exec. Director, Hospital Council of Greater New York  
 Colonel George H. Rarey (Ret.), 120 Mt. Vernon Drive, Decatur, Ga.  
 William L. Rivers, 1803 Fairbank Rd., Baltimore 9, Md., Statistical Field Agent, Bureau of Vital Statistics, State Dept. of Health

### *Engineering Section*

A. Perry Banta, M.S., 159 Sierra View Rd., Pasadena 2, Calif., Assoc. Professor of Sanitary Engineering, California Institute of Technology  
 William H. Chun, 1216 Kinooole St., Hilo,

Hawaii, Sanitary Engineer, Board of Health, Territory of Hawaii  
 Russell C. Clement, 75 Overlook Terrace, Bloomfield, N. J., Division Manager, Wallace & Tiernan Co., Inc.  
 Oscar V. Cooper, Rt. 7, Box 652, Phoenix, Ariz., Senior Sanitarian, State Dept. of Health  
 Jean Dubeau, 1510 Bishop, Montreal, Que., Canada, Public Health Engineer, City Health Dept.  
 Oscar Egger, 130 E. 9th St., Fond du Lac, Wis., Asst. Sanitary Engineer, State Board of Health  
 Charles M. Gard, M.S., 76 New York Ave., Baldwin, L. I., N. Y., Chief, Sanitation Section, Hdqtrs. Second Service Command  
 Stafford W. Graydon, M.A., 1258 Blvd. Drive, N.E., Atlanta, Ga., Public Health Engineer, City Health Dept.  
 Norberto Guillen-Bustamante, 16 Shepard St., Cambridge, Mass., Student, Graduate School of Engineering, Harvard University  
 Lt. Col. Carl E. Haiss, P. O. Box 293, Troy, N. Y., Sanitary Engineer, 20th Air Force  
 Arthur E. Kinzer, 212 Vermont, Urbana, Ill., Sanitarian, Champaign Urbana Public Health Dept.  
 Lawrence W. Leake, 700 S.W. 31st Ave., Miami, Fla., Senior Sanitary Officer, Dade County Health Dept.  
 J. Roy Leonard, 220 Lenland Ave., Knoxville, Tenn., Sanitary Engineer, Oak Ridge Health Dept.  
 Glenn Lotspeich, 215 McGoodwin St., Warrensburg, Mo., Sanitary Inspector, State Health Dept.  
 Thomas M. McMorrow, 1435 Date St., Martinez, Calif., Sanitarian, Contra Costa County Health Dept.  
 Charles A. O'Quinn, Jr., P. O. Box 411, Madison, Fla., Senior Sanitary Officer, Madison County Health Unit  
 Patrick N. Owens, Box 683, Johns Hopkins Univ., Baltimore 18, Md., Student, Sanitary Engineering  
 Jucundino F. Puget, C.E., 810 Washington. Ann Arbor, Mich., Civil Engineer, Servico Especial de Saude Publica. Brazil  
 Lyman A. Scribner, D.V.M., Box 1923, Orlando, Fla., Sanitarian, Orlando City Health Dept.  
 John V. Spencer, Board of Health, Town Hall, Saugus, Mass., Agent  
 Jerome H. Svore, M.S., State Health Dept., Bismarck, N. D., Director, Div. of Sanitary Engineering  
 Eurica Taques-Guimaraes, 810 E. Washington St., Ann Arbor, Mich., Student in Public Health Engineering, Univ. of Michigan

Norman L. R. Tuckett, Jr., Rt. 1, Box 174, Mount Dora, Fla., Sanitary Officer, City of Leesburg and Lake County Health Dept.

J. Alfonso Valdivieso, 282 Commonwealth Ave., Boston 16, Mass., Student, Graduate School of Engineering, Harvard Univ.

Samuel R. Weibel, 3248 Glengyle Ave., Cincinnati 8, Ohio, Public Health Engineer, U. S. Public Health Service

W. Frederick Welsch, C.E., 25 Fairway, Hempstead, L. I., N. Y., Asst. Zone Coordinator, Nassau County, State Mutual Aid Water Supply Program

#### *Industrial Hygiene Section*

Catherine W. Beauchamp, 4215 Leland St., Chevy Chase, Md., Information Specialist, Industrial Hygiene Division, U. S. Public Health Service

Gales R. Blakeslee, 1844 S. 52nd Ave., Chicago 50, Ill., Vice-President, G. S. Blakeslee & Co. (dishwashing machines)

Carl U. Dernehl, M.D., 409-14th St., Galveston, Tex., Asst. Professor, Preventive Medicine and Public Health, Medical Bureau, Univ. of Texas

Niel E. Eckelberry, M.D., 138 E. 15th St., New York, N. Y., Senior Asst. Medical Director, Consolidated Edison Co. of New York, Inc.

William P. Eckes, M.D., 4 Irving Place, New York, N. Y., Asst. Medical Director, Consolidated Edison Co. of New York, Inc.

Prof. Robert F. Ervin, Laboratories of Bacteriology, Univ. of Notre Dame, Notre Dame, Ind.

Allan J. Fleming, M.D., Dupont Experimental Station, Haskell Lab., Wilmington, Del., Asst. Director, Haskell Laboratory of Industrial Toxicology, E. I. Dupont de Nemours & Co.

John H. Foulger, M.D., Rockwood Rd., Wilmington 284, Del., Director, Haskell Laboratory of Industrial Toxicology, E. I. Dupont de Nemours & Co.

William A. Hodes, Jefferson Medical College, 1025 Walnut St., Philadelphia 7, Pa., Toxicologist, Sharples Chemicals. Inc.

Lloyd M. Markley, M.D., 205 West Harrison, Chicago 7, Ill., Chief Medical Examiner, The Pullman Co.

Doris A. Ramsey, R.N., 49 Pleasant St., Concord, N. H., Industrial Nursing Consultant, State Dept. of Health

Fredric W. Splint, M.D., 71 Park Ave., New York, N. Y., Ophthalmologist, U. S. Public Health Service

#### *Public Health Education Section*

M. St. Clair Augustine, 959 Cragmont Ave.,

- Berkeley 8, Calif., Student, School of Public Health, Univ. of California
- Jacob Auslander, M.D., 286 W. 86th St., New York, N. Y., Medical Adviser, New York Philanthropic League
- Leon Babalian, M.D., 32 Deering St., Portland 3, Me., formerly Associate Physician, St. Louis Hospital (Paris)
- G. Stanley Beane, 17 Dupont Circle, Washington 6, D. C., Asst. Chief, Public Inquiries Section, Div. of Public Health Methods, USPHS.
- C Floride Bissell, 18-B Colonial St., Charleston, S. C., Social Worker, Venereal Disease Clinic, Charleston County Health Dept.
- Claire M. Burke, R.N., M.A., 309 E. 92nd St., New York, N. Y., Trainee, National Tuberculosis Assn.
- Joseph G. Carling, M.S.P.H., 781 Kensington Ave., Salt Lake City, Utah, Health Education Consultant, State Dept. of Health
- Charles W. Chilman, A.M., 603 Loew Bldg., Syracuse 2, N. Y., Asst. Exec. Secy., Syracuse Council of Social Agencies
- Rose M. Cullen, M.S.P.H., 608 Wynnewood Rd., Philadelphia 31, Pa., Administrator, Children's Heart Hospital
- Henry V. Curtis, 608 E. 6th St., Oklahoma City, Okla., State Health Education Specialist, State Dept. of Health
- Morris E. Dailey, M.D., Univ. of Calif. Hospital, San Francisco, Calif., Clinical Instructor in Medicine, Univ. of Calif. Medical School
- Mildred Dewberry, 3086 Livingston Rd., Apt. C-2, Suite 1, Cleveland, Ohio, Asst. Curator in Education, Cleveland Health Museum
- John B. Dibeler, 6526 Gesner St., Philadelphia 42, Pa., Public Health Student, Dept. of Public Health, Yale Univ. Medical School
- Anne L. Edwards, 175 Lawrence St., New Haven, Conn., Student, Yale Univ.
- Dallas H. Edwards, M.Ed., 2 Market House, Meadville, Pa., Exec. Secy., Crawford County Tuberculosis Society
- Marguerite Fish, 321 N. Thayer, Ann Arbor, Mich., Student, Univ. of Michigan School of Public Health
- Berta C. George, 47 Landseer St., West Roxbury, Mass., Health Education Worker, Harvard Univ. (in coöperation with State Dept. of Health)
- M. Helen Halladay, R.N., 615 Prospect St., Elgin, Ill., Tuberculosis Nursing Consultant, Cook County Dept. of Public Health
- William C. Harder, 116 S. Michigan Ave., Chicago, Ill., Exec. Secy., Illinois Assn. for the Crippled
- Eleanor Harper, R.N., 23 La Arcada Bldg., Santa Barbara, Calif., Junior Staff Worker, Calif. State Tuberculosis Assn.
- Anna Hassels, R.N., 1038 North Cass St., Milwaukee, Wis., Educational Director, The Visiting Nurse Assn.
- Phyllis C. Hecker, 2241 Jackson St., San Francisco 15, Calif., Student, Univ. of California, School of Public Health
- Dorothy Johnson, B.S. in N., School of Nursing, Vanderbilt Univ., Nashville, Tenn., Instructor in Pediatric Nursing
- Frances L. Karlsteen, 1244 W. North Shore, Chicago 26, Ill., Exec. Secy., Cook County Chapter, National Foundation for Infantile Paralysis, Inc.
- Elizabeth J. Lipford, B.S., in N., 1027 E. Catherine St., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan
- Mildred A. Logan, Cedar Gables, Napa, Calif., School Nurse, Napa City Schools
- Wayne McFarland, M.D., 6856 Eastern Ave., N.W., Washington, D. C., Editor, Life and Health
- John H. Mitchell, 21 E. State St., Columbus 15, Ohio, Asst. Professor, Dept. of Medicine, Ohio State Univ.
- C. Elizabeth Mong, 311 Trust Bldg., Chambersburg, Pa., Exec. Secy., Franklin County Tuberculosis Society
- Gerald M. Porter, M.A., 314 14th St., Denver 2, Colo., Exec. Secy., Denver Public Health Council
- Marion E. Proesel, 2745 29th St., N.W., Washington 8, D. C., Information Specialist, U. S. Public Health Service
- Anne M. Rouse, 5 Washington Terrace, Charleston, W. Va., Educational Social Consultant, State Health Dept.
- Delmar R. Serafy, M.A., 500 Brandeis Theatre Bldg., Omaha 2, Nebr., Exec. Secy., Nebraska Tuberculosis Assn.
- James H. Skillin, M.S., 3583 Life Sciences Bldg., Univ. of California, Berkeley 4, Calif., Lecturer in Public Health, School of Public Health
- Maysie G. Smiley, R.N., 912 W. 20th St., Los Angeles 7, Calif., Director of Nurses, Metropolitan Life Insurance Co., Southern California
- William W. Stiles, M.D., Army Medical Dept. Schools, Ft. Sam Houston, Tex., Instructor
- T. Arthur Turner, 305 W. Wisconsin St., Chicago, Ill., Director of Informational Service, National Society for Crippled Children and Adults
- Florence A. Welch, M.A., 3 Concord Ave., Cambridge, Mass., Health Education Worker, Harvard Univ. (in coöperation with the State Dept. of Public Health)
- John K. Williams, 411 Bienville St., Room

403, New Orleans, La., Field Representative, American Social Hygiene Assn.  
 Edward L. Worthington, 226 City Hall, Cleveland 14, Ohio, Director of Public Health and Welfare, Dept. of Public Health and Welfare

#### *Public Health Nursing Section*

Helen V. Brugh, E. 201 Idaho Hall, Arlington, Va., Chief Nurse, Government Residence Halls Infirmaries, U. S. Public Health Service

Sylvia C. Bryson, 1730A, Lincoln, Nebr., Chief, Public Health Nursing Service, Lincoln Health Dept.

Regina A. Burns, 1352 Longfellow St., N.W., Washington, D. C., Asst. Public Health Nursing Consultant, Employees Health Service, U. S. Public Health Service

Ida L. Carothers, 304 Market St., Lancaster, S. C., Asst. District Supervising Nurse, Tuberculosis Control Div., State Board of Health

Lena L. Corbin, R.N., RR 2, Buechel, Ky., Head Nurse, Kentucky Treatment Center  
 Margaret H. Degnan, 5412 Hampshire Drive, Minneapolis 9, Minn., Supervisor of Public Health Nurses, Div. of Public Health

Grace W. DeWitt, R.N., 310 Majestic Bldg., Quincy, Ill., Director, Quincy Visiting Nurse Service

Virginia A. Dreifuss, R.N., 1890 E. 97th St., Suite 2, C/O Uddenberg, Cleveland 6, Ohio, Student, Public Health Nursing, Western Reserve Univ.

Elise J. Early, R.N., Health Dept., Winston-Salem, N. C., Supervisor, City-County Health Dept.

E. Pauline Echols, 6303 First Ave., N., Birmingham 6, Ala., Supervisor, Jefferson County Board of Health

Florence E. Ferguson, Walsh County Public Health Nursing Service, Grafton, N. D., Public Health Nurse

Jessie M. Good, 1415 Glynn Ct., Detroit 6, Mich., Supervisor, Detroit Dept. of Health  
 Louise B. Groll, R.N., Strathaven Apts., Glen Cove, N. Y., Director, Glen Cove District Nursing Assn.

Elizabeth Hilborn, M.A., 84 E. Fayette, Hillsdale, Mich., Supervising Nurse, Hillsdale County Health Dept.

Helen Horkavi, 3058 N. 51st, Milwaukee 10, Wis., Acting Director, Public Health Nursing, Marquette Univ., College of Nursing

Rita F. Huener, R.N., 314 E. State St., Ithaca, N. Y., District Supervising Nurse, State Dept. of Health

Ethel V. Iagmin, R.N., 408 Weeks Ave.,

Superior, Wis., Asst., Superior Health Dept.  
 Charlotte A. Kleiss, M.S., State Dept. of Health, Bismarck, N. D., Asst. Director of Public Health Nursing

Mildred Laughlen, 132 Main St. E., North Bay, Ont., Canada, Public Health Nurse, Dept. of Health

Ethel M. Leazenbee, M.A., 2255 W. Broad St. 108, Columbus 4, Ohio, Educational Director and Instructor in Public Health Nursing, Instructive District Nursing Assn.

Willie Pauline Lovingood, 710 S. Moore Rd., Chattanooga, Tenn., Staff Nurse, Chattanooga-Hamilton County Health Dept.

Clarice A. Mathews, P. O. Box 334, Umatilla, Fla., Senior Public Health Nurse, Lake County Health Dept.

Maxine Maxwell, R.N., Court House, Greencastle, Ind., Putnam County Public Health Nurse

L. Margaret McLaughlin, M.A. in N., U.S.P.H.S., Nutrition Sec., Bethesda Sta., Washington 14, D. C., Senior Asst. Nurse Officer (R)

Charlotte McLoughlin, Kanawha County Health Dept., Charleston, W. Va., Public Health Nurse

Jean M. Moore, R.N., 2410 North A., Tampa 6, Fla., Local Director of Public Health Nurses, Hillsborough County Health Dept.

Mercedes Murphy, R.N., 112 South Brenengh St., Tallahassee, Fla., Supervising Nurse, Leon County Health Dept.

Celia M. O'Berry, P. O. Box 311, Tavares, Fla., Supervisor Nurse, Lake County Health Dept.

Anna E. O'Brian, 114 Farmington Ave., Bristol, Conn., Public Health Nurse, Lake County Health Dept.

Mary A. Rice, County Health Dept., San Luis Obispo, Calif., Asst. Nurse Officer, U. S. Public Health Service

Annette M. Sheehy, 26 Bay St., Glens Falls, N. Y., Asst. District State Supervising Nurse, State Dept. of Health

Mildred R. Spellman, R.N., Michigan Dept. of Health, Lansing, Mich., Regional Consultant

Agnes E. Stahly, M.S.P.H., 1406 Bay St., Saginaw, Mich., Public Health Nursing Instructor, Univ. of Michigan

#### *Food and Nutrition Section*

Mary P. Bell, M.S., State Board of Health, Raleigh, N. C., Senior Nutritionist

Virginia C. Coker, M.S., Box 606, Auburn, Ala., State Home Management Specialist, Farm Security Admin.

Eva G. Donelson, Ph.D., Ohio State Univ., Home Economics School, Columbus 11, Ohio, Assoc. Professor of Nutrition

Sophie Gordon, 10 Anthony St., Franklin, Mass., Public Health Nutrition Worker, State Dept. of Public Health

Frankie S. Hansell, M.S., 70 Remsen St., Brooklyn 2, N. Y., Nutritionist, Nutrition Div., City Dept. of Health

Ruth E. Irwin, 76 State St., Div. of M.I.C.H., Albany, N. Y., Nutritionist, State Dept. of Health

Dessie Lynn, M.A., 289 Convent Ave., New York 31, N. Y., Nutritionist, City Dept. of Health

Capt. Robert W. Menges, V.C., 12806 Maple-row Ave., Garfield Heights 5, Ohio, Meat and Dairy Hygiene Inspector and Post Veterinarian, U. S. Army

Harold B. Pierce, Ph.D., 360 College St., Burlington, Vt., Professor of Biochemistry, College of Medicine, Univ. of Vermont

Mary A. Ross, M.A., 414 E. Tremont Ave., Bronx 57, N. Y., Nutrition Consultant, Community Service Society of New York

Marie Sellers, 250 Park Ave. New York 17, N. Y., Director of Consumer Service Dept., General Foods Corp.

Robert G. Townsend, 2298 Sheldon St., Lincoln, Nebr., Sanitarian, Dept. of Health

M. Elizabeth Vaughn, M.P.H., 1900 West Polk St., Chicago 12, Ill., Asst. Director, Dietary Dept., in charge of Nutrition Clinic, Cook County Hospital

Russell M. Wilder, M.D., Mayo Clinic, Rochester, Minn., Member, Food and Nutrition Board, National Research Council

#### *Maternal and Child Health Section*

Donald M. Alderson, M.D., Capitol Bldg., Room 1001, Lincoln, Nebr., Asst. Director, Div. of Maternal and Child Health, State Dept. of Health

Gwendolyn Beckman, 265 Robinson Rd., Pasadena 3, Calif., Medical Social Consultant, Crippled Children Services

Alice C. Ferdinand, M.D., 329 Jefferson Bldg., Peoria, Ill., Pediatrician

Virginia G. Harris, M.D., Calvert Apts. D5, Calvert and 31st, Baltimore 18, Md., Pediatrician, State Dept. of Health

Wirth Howell, 1001 Huron Rd., Cleveland Child Health Assn., Cleveland 15, Ohio, Acting Director

Jose A. Munoz-Martinez, M.D., 213 Aspinwall Ave., Brookline 46, Boston, Mass., Student, School of Public Health, Harvard Univ.

Aura J. Neely, R.N., 1022 S.W. 11th Ave., Portland 5, Ore., Licensing Advisor, State Board of Health

Carlos F. Portillo-Guifarro, M.D., Ave. Gutenberg, Tegucigalpa, D. C., Honduras, C. A., Student, School of Public Health, Harvard Univ.

William L. Rumsey, Jr., M.D., 766 Westfield Ave., Elizabeth 3, N. J., Medical Director, Cardiac Program, N. J. Crippled Children Commission

Robert H. Saber, M.D., 279 Boyden Ave., Maplewood, N. J., Practising Physician

Charles C. Tudor, M.D., Court House, Pasco, Wash., Health Officer, Benton Franklin Health Dept.

John Whitridge, Jr., M.D., 2411 N. Charles St., Baltimore, Md., Obstetrical Consultant, State Dept. of Health

#### *Epidemiology Section*

Julius M. Amberson, M.D., 150 Cordula St., Corpus Christi, Tex., Officer in Charge, Epidemiology and Sanitation, Naval Air Bases

Jorge E. Atkins, M.D., 55 Shattuck St., Boston, Mass., Physician, Servicio Co-operative Inter-Americano de Salud Publica, Peru, S. A.

Francis S. Cheever, M.D., Harvard Medical School, 25 Shattuck St., Boston, Mass.

Eurico da Costa-Carvalho, M.D., 1361 Wil-mot, Ann Arbor, Mich., Asst. Professor of Hygiene, College of Medicine, Univ. of Brazil

James N. DeLamater, M.D., 2005 West Hellman Ave., Alhambra, Calif., Asst. Professor, Univ. of Southern California Medical School

Garibaldi de Faria, M.D., 216 N. State, Ann Arbor, Mich., Student, Univ. of Michigan School of Public Health

Alto E. Feller, M.D., Respiratory Diseases Commission Laboratory, Hospital 2, Fort Bragg, N. C., Consultant to the Secretary of War in Infectious Diseases

Koert Koster, M.D., 757 Covington Drive, Detroit 3, Mich., Chief Physician, Tuberculosis, Herman Kiefer Hospital

James E. Reed, Fayetteville, W. Va., Venereal Disease Follow-up Worker, U. S. Public Health Service (cooperating with the State Dept. of Health)

Florence R. Sabin, M.D., 1333 E. 10th Ave., Denver 3, Colo., Chairman, Governor's Committee on Health

Mario M. Sampaio, M.D., 320 E. Liberty, Ann Arbor, Mich., Student, Univ. of Michigan School of Public Health

Morris Siegel, M.D., M.P.H., 1075 Grand Concourse, New York 52, N. Y., Assoc., The Public Health Research Institute of the City of New York, Inc.

Leland E. Starr, D.V.M., 2005 Palifox Drive, N.E., Atlanta, Ga., Public Health Veterinarian, State Dept. of Health

F. Clark White, M.D., C.M., New York State Hospital, Ray Brook, N. Y., Supervising Hospital Physician

Donald C. Young, M.D., 1151 Taylor Ave., Detroit 2, Mich., Medical Director, Communicable Disease Div., Herman Kiefer Hospital

Alexander Zeissig, D.V.M., 305 Oak Ave., Ithaca, N. Y., Veterinary Consultant, Div. of Communicable Diseases, State Dept. of Health

#### *School Health Section*

Carlos Barberousse, M.D., Lavelleja 1712, Montevideo, Uruguay, S. A., Student, Columbia Univ. School of Public Health

Eva I. Beeler, R.N., 1811 Eleventh Ave., Oakland 4, Calif., Health Education Director, Northern Calif. Conference, Seventh Day Adventists

Thomas C. Ferguson, Ed.D., 1111 Lexington Bldg., Dept. of Ed., Baltimore 1, Md., State Supervisor of Physical Education and Recreation

Alice R. Freeman, 636 N. Kings Rd., Los Angeles 36, Calif., Nurse Inspector, Los Angeles Board of Education

Leo L. Gleaves, M.S., 6200 Monroe St., Cheverly, Md., Supervisor of Health Education, Board of Education of Prince Georges County

Charles C. Hawkins, West Virginia State College, Institute, W. Va., Director, Dept. of Health, Physical Education and Safety

Dorothy C. Herzer, R.N., 1836 N. Jones Ave., Los Angeles, Calif., Nurse Inspector, Los Angeles City Schools

Grayce S. Hoke, R.N., 714½ Lee St., Charleston, W. Va., Nurse Supervisor, Kanawha County School Health Service

Philip W. Johnston, Ph.D., Massachusetts Dept. of Public Health, 73 Tremont St., Boston, Mass., Consultant, Child Growth and Development Service

David L. Russell, M.D., 690 Bergen Ave., Jersey City, N. J., Medical Inspector, Board of Education

George M. Stuber, 4125 Day Ave., Apt. 2F, Richmond, Calif., Student, Univ. of California School of Public Health

Johanna Weblemoe, State Teachers College, Mankato, Minn., College Nurse and Instructor in Health Education

#### *Dental Health Section*

Dr. Conrad F. Hellwege, 269 S. 19th St., Philadelphia, Pa., Supervising Dentist, Bureau of Health

Sarah E. Hill, D.H., Lee County Health Dept., Tupelo, Miss., Northeast District Dental Hygienist, State Board of Health

Harry A. Krupp, D.D.S., Wallace Bldg., Wallingford, Conn., Member, Council on Dental Health, State Dental Assn.

Herman Mendelson, D.D.S., Western State Hospital, Staunton, Va., Senior Dental Surgeon

Fred Wertheimer, D.D.S., 1326 Westview, East Lansing, Mich., Public Health Dentist, State Dept. of Health

Harry N. Young, D.M.D., 650 Forest Ave., Portland, Me., President, Maine Dental Society

#### *Unaffiliated*

Aloysio S. de Almeida, M.D., 610 Forest Ave., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

William Brody, M.A., Dept. of Health, 125 Worth St., New York 13, N. Y., Director of Personnel

Enos G. Huffer, 1328 Noble Ave., Springfield, Ill., Milk Sanitarian, State Dept. of Public Health

Howard M. Kline, Ph.D., 9300 Mintwood St., Silver Spring, Md., Technical Secretary, Subcommittee on Medical Care, Committee on Administrative Practice, American Public Health Assn.

John W. Schroer, D.V.M., City Hall, Albuquerque, N. M., City Sanitarian

Harvey G. Tableman, D.V.M., Box 213, Warren, Ill., Veterinarian

Dr. Jan Tarm Tuntler, van Eeghenstr 97, Amsterdam, Holland, Chief Medical Officer, City of Amsterdam

#### DECEASED MEMBERS

Benjamin W. Black, M.D., Oakland, Calif., Elected Member 1944, Health Officers Section

William Dreyfus, D.Sc., New York, N. Y., Elected Member 1905, Unaffiliated

O. N. Eisaman, M.D., Pittsburgh, Pa., Elected Member 1940, Laboratory Section

Major William H. Lloyd, Mt. Victoria, Md., Elected Member 1919, Unaffiliated

Burton Lowther, Denver, Colo., Elected

Member 1935, Engineering Section

Thomas T. McKinney, M.D., Denver, Colo., Elected Member 1932, Public Health Education Section

Milton J. Rosenau, M.D., Chapel Hill, N. C., Elected Member 1909, Charter Fellow, Epidemiology Section

Charles Urbach, M.D., Ph.D., Philadelphia, Pa., Elected Member 1941, Laboratory Section

SUSTAINING MEMBERS, AMERICAN  
PUBLIC HEALTH ASSOCIATION, 1946

American Bottlers of Carbonated Beverages,  
Washington, D. C.

Ames Company, Inc., Elkhart, Ind.

The Borden Co., New York, N. Y.

The Chlorine Institute, Inc., New York, N. Y.

Clay-Adams Co., Inc., New York, N. Y.

Difco Laboratories, Inc., Detroit, Mich.

The Diversey Corp., Chicago, Ill.

Equitable Life Assurance Society, New York,  
N. Y.

Fuld Brothers, Baltimore, Md.

John Hancock Mutual Life Insurance Co.,  
Boston, Mass.

Hoffman-LaRoche, Inc., Nutley, N. J.

Holland-Rantos, Co., Inc., New York, N. Y.

International Assn. of Ice Cream Manufac-  
turers, Washington, D. C.

International Equipment Co., Boston, Mass.

Lederle Laboratories, New York, N. Y.

Liberty Mutual Insurance Co., Boston, Mass.

Life Insurance Co. of Virginia, Richmond, Va.

Lily-Tulip Cup Corp., New York, N. Y.

The Macmillan Co., New York, N. Y.

Mr. George W. Merck, Rahway, N. J.

Metropolitan Life Insurance Co., New York,  
N. Y.

National Life Insurance Co., Montpelier, Vt.

Oval Wood Dish Corp., Tupper Lake, N. Y.

The Prudential Insurance Co., of America,  
Newark, N. J.

St. Joseph Lead Co., New York, N. Y.

The Sealright Co., Inc., Fulton, N. Y.

Sharp and Dohme, Inc., Glenolden, Pa.

E. R. Squibb and Sons, Brooklyn, N. Y.

Sun Life Insurance Co., Baltimore, Md.

The Travelers Insurance Co., Hartford, Conn.

Union Central Life Insurance Co., Cincinnati,  
Ohio

The Upjohn Co., Kalamazoo, Mich.

West Disinfecting Co., Long Island City, N. Y.

Western and Southern Life Insurance Co.,  
Cincinnati, Ohio

Winthrop Chemical Co., Inc., New York, N. Y.

Wyeth and Co., Philadelphia, Pa.

RESOLUTION ADOPTED BY THE EXECUTIVE  
BOARD OF THE A.P.H.A. ON BEHALF  
OF THE AMERICAN PUBLIC  
HEALTH ASSOCIATION

March 21, 1946

The American Public Health Association, impressed from first hand reports of public health workers of the actual starvation and destitution from which

many persons, especially children, are suffering in war-devastated areas, and believing that prompt and effective relief is essential for the survival of those persons and for world peace, hereby declares its support of the efforts now being made by the United States Government in agreement with other governments to use all necessary measures to extend relief.

The Association commends the President of the United States for his order of February 6 on the world food crisis and for the steps which he has taken to create the Famine Emergency Committee, designed in the shortest possible time to help meet critically urgent needs.

In agreement with other agencies, we commend the inclusion in this relief program, in addition to wheat, of fats and oils and meats, and we especially commend the inclusion of dairy products so essential to child health.

We pledge our utmost effort, both individually and collectively, to enlist coöperation in the program.

THE A.P.H.A. MEMBERSHIP DIRECTORY

A new *A.P.H.A. Membership Directory* (the first since 1937) will be published in August. In this it is planned to show the name and address and full title of every member of the Association. Membership classifications and Section affiliations will also be given. The *Directory* will be geographically arranged and there will be an alphabetical index as well.

The *Directory* will be dated June 1 and information and corrections can be accepted up to May 31 but not beyond this date. A letter was mailed to all A.P.H.A. members in April, requesting the return of a postcard giving information for the *Directory*. The office thanks those members who have already responded with the required information, and reminds those who did not return the postcard to do so before May 31.

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### Vacant Positions Listed with the Association's Vocational Counseling and Placement Service

As this issue of the *Journal* went to press, the Vocational Counseling and Placement Service of the American Public Health Association, 1790 Broadway, New York City, had listed 281 positions available for physicians in public health administration, epidemiology, and in the clinical field. Thirteen positions were offered to non-medical administrators, 7 to public health dentists, 31 to health educators, 32 to laboratory workers, 44 to sanitary engineers, 5 to industrial engineers, 49 to sanitarians, 6 to statisticians, and 5 for nutritionists. A total of 501 positions offered by 149 employers were currently listed. One hundred and fifty-six applicants in all categories were in the record. This represents a substantial increase from the figures of one month previous. Only a part of these openings are covered in listings on the employment page of the *American Journal of Public Health*. Employers and candidates interested should communicate with the Vocational Counseling and Placement Service at the above address.

As previously announced, this service is rendered without charge by the Association, which is assisted for this purpose by the U. S. Public Health Service in a jointly sponsored project carried on under the auspices of the A.P.H.A. Committee on Professional Education, of which William P. Shepard, M.D., of San Francisco, is *Chairman*. It is the aim of this service to place at the disposal of all persons now seeking positions in public health the counsel of those well informed in the field, with a special effort to assist veterans. Public health nursing positions are not listed by the A.P.H.A. but inquiries are forwarded to the N.O.P.H.N. and other nurse placement agencies

### POSITIONS AVAILABLE

(Supplemental to list in April Journal)

**Wanted Immediately:** Public health nursing supervisor with B.S. degree. Generalized program. Salary from \$190 to \$225 plus car allowance. City of 105,000. Apply Dr. E. V. Thiehoff, Commissioner of Health, City Health Dept., Peoria, Ill.

**Wanted:** White and colored public health nurses with cars for Migratory Labor Health Association. Salary \$2,100, 40 hour week. Nursing service to Jamaican and domestic farm workers housed in camps in Florida, South Carolina, North Carolina, and Virginia. Apply Area Supervising Nurse, Box 1671, West Palm Beach, Fla.

Position open for bacteriologist-chemist, pathologist. Permanent, full-time. State qualifications, experience and salary expected. Apply Box 583, Fall River, Mass.

Sanitary Engineers and graduate sanitarians, college degree required, wanted

for overseas work. Starting salaries from \$3,450 to \$5,325 depending on qualifications. Full maintenance provided. Apply U.N.R.R.A. Health Division, Building F, 1344 Connecticut Ave., Washington, D. C.

Oregon State Board of Health has openings in following positions: County Health Units Director, salary range \$400 to \$500 per month. Venereal Disease Control Officer, beginning salary \$450 per month. Tuberculosis Control Officer, beginning salary \$450 per month. Several county health officer positions open, salary range \$400 to \$525 per month. Ample travel allowance. Apply A. T. Johnson, Personnel Officer, Oregon State Board of Health, Portland 5, Ore.

**Wanted:** Physician in Hartford, Conn., population 185,000, as Director of Bureau of Maternal and Child Hygiene. Write Health Officer, Department of Health, Hartford 4, Conn.



**Hawaii Board of Health Wants:**

**Psychiatrist** to direct bureau of mental hygiene. Salary \$645 to \$728.33 plus \$45 bonus. Qualifications: 2 years' experience in psychiatry and neurology following graduation from medical school of recognized standing, including or supplemented by 1 year internship in recognized general hospital and supplemented by 2 years' specialized training in psychiatry and neurology.

**Obstetrician** to assist in execution of program of maternal and child health. Salary \$520 to \$620 plus \$45 bonus. Qualifications: 3 years' experience or specialized training in obstetrics following graduation from medical school of recognized standing, including or supplemented by 1 year internship in recognized general hospital and 1 year graduate training in public health.

**Public Health Physician** to direct public health program of county district. Salary \$520 to \$620 plus \$45 bonus. Qualifications: 2 years' experience as physician, preferably in public health work, and graduation from medical school of recognized standing, including or supplemented by 1 year internship in recognized general hospital and supplemented by 1 year graduate training in public health.

**Three Sanitary Engineers.** One as division director with P-5 classification to direct mosquito control program, salary \$436.67 to \$520 plus \$45 bonus. Second position, P-4, that of engineer-in-charge of sanitary engineering projects in county district, salary \$362.08 to \$436.67 plus \$45 bonus. Third position, P-3, that of housing engineer responsible for housing program, salary \$295.42 to \$362.08. Experience: For sanitary engineer, P-5, 4 years' professional engineering experience of which 2 years shall have been in sanitary engineering work; for county sanitary engineer, P-4, 3 years' experience in sanitary engineering work; for housing engineer, P-3, 2 years' experience in sanitary engineering work, preferably housing. Training: For all 3 sanitary engineers, graduation from college or university of recognized standing, with specialization in engineering, preferably supplemented by courses in public health engineering. Write to Civil Service Commission, Territory of Hawaii, 206 Hale Auhau, Honolulu, Hawaii. Use clipper mail.

**Wanted:** Assistant in Health Division, Council of Social Agencies, interested in community organization and health education. Large city and metropolitan area. Training and experience in public health organization and health education required. Write Box G, Employment Service, A.P.H.A.

**Wanted:** Public health nurses in newly organized and growing health department, Chicago area. Starting salary \$2,100 or more, depending on qualifications, plus \$50 monthly travel allowance. Must be Illinois certified or eligible. Apply Director, DuPage County Health Department, 52 East St., Charles Road, Villa Park, Ill.

**Sanitary or Public Health Engineer** wanted in Training Center in Louisiana, to teach various phases of environmental sanitation practice and supervise field training of sanitary inspectors. Position to be covered by State Civil Service with grade of Public Health Engineer III. Starting salary \$350 monthly. Man experienced in the usual and varied activities of county health department desired. Apply Dr. David E. Brown, State Health Officer, New Orleans 7, La.

**Wanted:** Physician to serve as director of health and hygiene for Board of Education of Cincinnati. Experience in routine medical examinations of adults, in pediatrics and in public health education is desirable. Beginning salary \$454 per month on 11 month basis. Apply Board of Education, 216 E. Ninth St., Cincinnati, Ohio.

**Public Health Nursing positions available,** rural county health departments, Washington State, need urgent. Salary range for qualified public health nurses with experience \$190 to \$230 plus travel. Write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle 4, Washington.

**Wanted:** Public Health Nurses, one white and one colored, with special training in tuberculosis work, to act as consultants, advise field nurses regarding their home visits, participate in student educational program, participate in staff educational program and act as consultants to tuberculosis clinics for Louisville and Jefferson County Health Dept., which is affiliated with University of Louisville School of Medicine. Salary \$175 per month. Also Supervisor to supervise districts in general program. Applications received by Louisville Civil Service Board, 300 City Hall, Louisville 2, Ky.

**Wanted Immediately:** Physician to serve as health officer in large local department in State of Washington. Salary range \$5,280 to \$6,300, entrance varying with education and experience of candidate. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle, Wash.

**Wanted:** Experienced Sanitarians with college degree to serve in local health

departments. Salary range \$2,400 to \$2,880, entrance varying with education and experience of candidate. Opportunities of advancement to Senior Sanitarian with salary range \$2,760 to \$3,360. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle, Wash.

**Wanted: Sanitarian** to conduct survey and educational work in food factory sanitation in East and Middle West for trade association; must be well grounded in principles of plant sanitation and have speaking ability. Apply National Cancer Assn., Research Laboratories, 1739 H St., N.W., Washington, D. C.

**Health Officers Wanted:** Positions open in Georgia for county and district commissioners of health. Salaries for experienced public health physicians range from \$4,800 to \$6,600. Salaries for physicians with public health training who are entering the field range from \$3,960 to \$4,920. Liberal travel allowance. Tenure of office assured by a merit system. License to practise in Georgia required. Ample opportunities for training offered with liberal stipend while in training. Write T. F. Abercrombie, M.D., Director, State Health Dept., State Office Bldg., Atlanta 3, Ga., for application and full details.

**Sanitarians Wanted:** Several permanent positions available for sanitarians in County and District Health Depts. in Georgia. Salaries range from \$2,100 to \$3,360 varying with education, experience, and duties assigned. Liberal travel allowance given. College graduates preferred but opportunities available for non-

college graduates who can offer experience in sanitation activities. Write Personnel Administrator, State Health Dept., Atlanta 3, Ga., for application and full details.

**Tuberculosis Control Officers Wanted:** A program of increased emphasis on control of tuberculosis requires 9 additional tuberculosis control officers in Georgia Dept. of Public Health. Salaries from \$4,800 to \$6,600 plus travel, according to education, experience, duties assigned, and length of service. Some positions available for physicians experienced in tuberculosis diagnosis and treatment who do not yet have public health experience. Write Dr. T. F. Abercrombie, Director State Health Dept., State Office Bldg., Atlanta 3, Ga., for application and full details.

**Public Health Nurses** needed in Georgia. State and County Depts. of Public Health in Georgia invite qualified public health nurses to apply for permanent positions in Georgia. Staff nurses must have minimum of 6 months post-graduate public health nursing education in addition to acceptable basic training. Salaries range from \$1,860 to \$2,040 in addition to liberal travel allowance. Supervisory nurses must have at least 2 years' experience in public health nursing as well as 1 academic year of post-graduate training in public health nursing. Salaries range from \$2,100 to \$2,280 in addition to travel allowance. Scholarships available for graduate nurses interested in receiving public health nursing training. Write Personnel Administrator, State Health Dept., Atlanta 3, Ga., for application and full details.

## POSITIONS WANTED

**Senior Bacteriologist, Ph.D., 25 years'** experience in public health and medical bacteriology, 3 years executive laboratory post in Army general hospitals, seeks hospital or public health laboratory connection. L-487

**Bacteriologist, woman, B.S. 1941, 4½ years'** laboratory experience, hospital and public health, seeks position in or near New York City. Prefers desk position such as technical literature research, abstracting, etc. Also interested in laboratory work. L-481

**Bacteriologist: M.A., Johns Hopkins,** seeks position in medical college or state public health laboratory. Broad experience. L-482

**Chemist, experienced in food, drug and insecticide analysis, seeks laboratory position.** L-483

**Serologist-Bacteriologist, Ph.D., D.V. M., 16 years'** experience in public health and hospital work, 3 years in charge Army hospital laboratory. Desires Directorship with opportunity for research. L-426

**Serologist, A.M., over 7 years'** experience in serology of syphilis and related fields in state health dept. laboratory and in central laboratories of U. S. Army desires position as head of serology section of state health department or research institute. Wide knowledge of public health laboratory procedures. L-489

### Announcement of Examination for Appointment of Sanitary Engineers to the United States Public Health Service

An examination for appointment as Assistant Sanitary Engineer and Senior Assistant Sanitary Engineer in the Regular Commissioned Corps of the United States Public Health Service is scheduled to be held at

Washington, D. C.—USPHS Dispensary, Fourth and D Streets, S.W.....	June 3
Atlanta, Georgia—Malaria Control in War Areas, 605 Volunteer Bldg.....	May 15
New Orleans, Louisiana—Marine Hospital, 210 State Street.....	May 17
Los Angeles, California—USPHS Relief Station, 406 Federal Bldg.....	May 21
San Francisco, California—Marine Hospital, 14th Ave. and Park Blvd.....	May 23
Seattle, Washington—Marine Hospital, Judkins St. and 14th Ave. South..	May 27
Denver, Colorado—USPHS District Office, 617 Colorado Building.....	May 29
Chicago, Illinois—Marine Hospital, 4141 Clarendon Avenue.....	May 31

The oral professional, academic, and physical examinations will be held at 9 A.M. at places and dates given above. The final written portion of the examination will be given simultaneously at the above locations beginning on June 5, 1946, and ending on June 7, 1946. The written portion of the examination may be given at certain other stations of the Service where two or more regular commissioned officers are on duty, if request is made by an applicant. Minimum age—21.

Education and Training: (1) Assistant, at least 7 years of educational (exclusive of high school) and professional training or experience and a degree in engineering (sanitary engineering course); (2) Senior Assistant, as above plus 4 additional years of post-graduate professional training or experience.

Compensation (including allowance for quarters and subsistence): (1) Assistant, \$3,411.00 with, and \$2,975.50 without dependents; (2) Senior Assistant, \$3,991.00 with, and \$3,555.50 without dependents.

Applicants should address a letter to the Surgeon General, U. S. Public Health Service, Washington, D. C., at the earliest practicable date, requesting application blanks. Such letter should include a brief biographical statement relative to professional school or college attended, type of studies pursued, degrees granted and subsequent training or experience. Applicants of foreign birth must furnish proof of United States citizenship.

Transportation expenses to and from and cost of maintenance at place of examination must be assumed by the candidate.

### Announcement of Scholarships in Nutrition

Four scholarships available, through North Carolina State Board of Health, at University of Tennessee, Knoxville, for year 1946. Applicants can enter in March or June. Scholarships will provide stipend of \$100 a month for 12 months plus tuition fees and travel while in training. Training period will be for 12 months and will include 9 months' formal training and 3 months' supervised field work. Eligibility requirements: (a) Age between 23 and 35 years; (b) Bachelor's degree in foods and nutrition, chemistry or biological sciences from a recognized institution; (c) teaching, hospital dietetics, nutrition research or other related subjects for a period of at least 2 years. Upon successful completion of training at University of Tennessee, candidates will be employed as nutritionists by North Carolina State Board of Health. Salary scale for nutritionists is \$1,800 to \$3,000 with additional travel allowance of \$1,200 a year. Interested applicants should send transcript of their college record and statement of experience since graduation to Director of Nutrition Division, State Board of Health, Raleigh, N. C.

### New York State Department of Health Offers Scholarships

Tuition for two semesters' study in public health nursing at approved university and monthly maintenance of \$100 for graduate nurses qualifying. Must be eligible to register in New York State. After preparation there is a two year field obligation to serve as rural public health nurse in upstate New York. Apply to Katherine E. Payne, R.N., New York State Department of Health, Albany 1, N. Y.

*Advertisement***Opportunities Available**

WANTED—(a) Public health director; county of 72,000 inaugurating new county health department; plans being made for staff of sixteen; physician trained and experienced in public health work required; headquarters in college town of 40,000. (b) Professor and head of department of hygiene; state university planning expansion program and offering curriculum in public health whereby students may major and receive Baccalaureate degree; young man experienced in teaching qualified to develop program required. (c) Student health physician to join staff of college expecting much greater enrollment this fall; present enrollment 4,000 students; 50 bed infirmary having excellent laboratory facilities; staff of eight nurses; town of 16,000; Southwest. (d) Physician experienced or trained in public health to take charge of rural county health departments located in vicinity of several large cities including university medical center; \$6,000; Middle West. PH5-1 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—Dentist, well qualified in field of preventive public health and children's dentistry, public health experience or training desirable; duties consist of work on prenatal patients, child health conferences and principally inaugurating a recognized program of preventive dentistry in primary and secondary schools; California. PH5-2 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health educator to organize and direct program of dental health education; duties include working quite closely with the public schools; must be well qualified in public relations;

dentist qualified in public health work eligible; \$3,600-\$5,000. (b) Health educator; industrial hygiene division of state department of health; young man with Ph.D. and industrial experience required; Middle West. (c) Executive secretaries and health educator for posts with tuberculosis and health association organized to carry on continuous campaign of information and education of the general public in regard to tuberculosis, venereal and communicable diseases; East. PH5-3 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—Several sanitarians to become associated with state department of public health entering expanded program of activities; openings for county sanitary officers and, also, assistant sanitary officers. PH5-4 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) School health nurse; Northern California; \$2,300-\$2,600. (b) Executive secretary; large district office with great many nursing activities; someone who can work with various community agencies required; \$3,500. (c) Student health nurse; newly created department, state teachers college; duties include developing and supervising health education program; Middle West. (d) Supervisory and staff nurses; department having important expansion program; East. (e) Field nursing consultant; industrial hygiene program; minimum \$3,000. (f) School nurse qualified in public health nursing; New York State. (g) Several public health supervisors and, also, staff nurses; generalized program; headquarters in fashionable winter resort town; fine climate, excellent opportunity for advancement. PH5-5 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

*Advertisement***Opportunities Wanted**

Sanitarian; B.S., Civil Engineering; M.S., Sanitary Engineering; experience consists of six years as chief operator and bacteriologist of water treatment plant; four years as sanitary engineer for water treatment and sewage treatment plants; recently discharged from military service; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Public Health physician: Master's degree in Public Health, Johns Hopkins; twelve years' experience as professor of preventive medicine, public health and industrial medicine, university medical school; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist and parasitologist; B.A. (major, zoology); M.A. (major, bacteriology); Ph.D. (major, parasitology); two years' teaching experience; parasitologist with Navy since 1941; expects early

discharge; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Health educator; B.S., M.S. and Ph.D. degrees; several years, instructor in biology, bacteriology and health; state university; three years, public health educator; city and county health department; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Dentist; D.D.S., university medical school; several years' private practice; year of postgraduate training in public health hygiene with special emphasis on public health dentistry for which he received degree of M.S.P.H.; several years, state department of health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### SANITARY ENGINEERS ON DUTY WITH UNRRA MAKE VALUABLE CONTRIBUTION

U. S. Public Health Service sanitary engineers on duty with the United Nations Relief and Rehabilitation Administration are making valuable contributions to the health of victims of the war.

In June, 1944, the first UNRRA health teams arriving at the camps for displaced persons in Egypt and Syria, included 24 engineers. They found work to do under conditions that were a challenge to their inventive ability and resourcefulness. At that time few supplies were available in the camps to combat the diseases which invariably prevail when groups of people from scattered parts of the world live together under crowded conditions.

In El Shatt Camp, many of the refugees were found to have bacillary or amebic dysentery. Tracing the source of infection, the engineers found it in the native workers in the kitchen who had no conception of modern sanitation and whose training had not prepared them to take precautions against the spreading of disease. When the refugee women, who had been taught to be immaculate in their habits, took over the preparation and serving of food the dysentery gradually disappeared.

At the camp in Nuseirat, the high percentage of dysentery was found to be caused by fresh vegetables and fruit which had been fertilized with human excreta. Since it was impossible to stop the people from buying and eating the infected food, the engineers devised a method of sterilizing it. The food was soaked in a chlorine solution for  $\frac{1}{2}$  hour and then rinsed off in clear water to remove the chlorine taste. After this

was done the percentage of dysentery among the inhabitants of the camps dropped sharply.

The sanitation program set up in the camps by Colonel Daniel E. Wright, Chief Sanitary Engineer, included a training course, in which the refugees, acting at first as understudies to the trained UNRRA workers, were gradually given more and more responsibility and eventually were able to run their own sanitation program. Colonel Wright is confident that the native lands of these trained workers will benefit from their new-found awareness of the importance of adequate sanitary protection and their knowledge of modern methods of disease control. The proudest and most efficient workers were elderly women who were latrine attendants. They kept the latrines immaculate and made all users obey the rules that had been set up to keep the latrines sanitary.

A main problem was to keep flies from spreading infection by going from latrines to kitchens. This was done by screening of the latrines and kitchens and spraying with DDT. It was also necessary to keep flies away from the garbage and to devise a method of disposal of it, as there were, of course, no disposal facilities for this in the primitive community. When the garbage was first removed from the kitchen it was temporarily stored in large bins covered with burlap which had been soaked in creosote and held down by a weighted hoop. Later the waste was buried in a ditch in the desert, and the depository was sprayed with creosote.

With the sanitation program in the camps well established, the engineers

moved, with other members of the health teams, into Greece, and later into Italy, Yugoslavia, and Germany to work in the camps for displaced persons, Austria and China. They are continuing their in these countries.

Everywhere they found filth and devastation left by war. In Salonika, Greece, the Germans had left 200 tons of garbage piled in the city streets and had taken away every possible means of transportation. The UNRRA engineers carted the refuse away in trucks, and within a few days it was all buried and the city was a correspondingly more pleasant and habitable place.

Public health workers have found scattered cases of louse-borne typhus in almost every country they have entered. The threat of typhus is an almost inevitable result of wars as people are crowded together in prisons, hospitals, and concentration and refugee camps, with no opportunity to keep clean. The members of the UNRRA health teams trained natives in methods of delousing and dusting with DDT, with the result that to date there have been no significant typhus outbreaks such as followed World War I.

The health teams found the hospitals in Greece in a pitiable state. There were no windows, few doors. Cockroaches crawled about the floors and walls of many. There was no drinking water. The Greek National Hospital in Athens, located in the basement of a tobacco factory and used as a fortress during the Greek Civil War, was one of the worst damaged places in the city. The engineers supervised the drilling of wells to supply a healthful water

supply, and dusted the hospital with DDT to kill cockroaches and lice.

Today sanitary engineers are at work in almost every country where UNRRA operates, and enough officers are to be recruited to continue the program in every UNRRA aided country. In Europe this spring an intensive program is being extended to combat malaria in Greece, Italy, Yugoslavia, and other malaria plagued countries.

Twelve planes have been procured for use in an air attack against the malarial mosquito, and sanitation workers are now beginning to spray the swamps and marshes where the malarial mosquito breeds, using solutions of DDT, paris green, and various oils that destroy the larvae. Other workers are spraying the interiors of buildings where the adult mosquitoes might hibernate and natives are helping to screen their own homes and buildings.

In many low swampy areas in Italy and Greece and other war-stricken lands, the percentage of malaria morbidity is very high. The number of working hours lost by victims of malaria is almost incalculable, and hundreds actually die of the disease each year.

Last year, despite the fact that the UNRRA anti-malaria program was just getting under way and the lack of adequate supplies and transportation made obstacles to effective work, the incidence of malaria in Greece was considerably lowered. The engineers stationed in countries receiving aid from UNRRA are assisting in programs which will apply modern methods to the age old problem of malaria control.

WILBUR A. SAWYER, *Director,*  
*UNRRA Health Division*

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#### MEDALS OF MERIT FOR ARMY'S PREVENTIVE MEDICINE PROGRAM

Major General Norman T. Kirk, Surgeon General of the Army, at the March meeting of the Medical Depart-

ment officers, presented Medals of Merit signed by President Truman to three eminent scientists for their work in the Army's preventive medicine program which gave the nation the healthiest

Army in history. The men honored are: Dr. Francis Gilman Blake, President of the Army Epidemiological Board; Dr. Alfred Newton Richards, Chairman of the Committee on Medical Research, Office of Scientific Research and Development; and Dr. Lewis H. Weed, Chairman of the Division of Medical Sciences, National Research Council.

In 1940 Dr. Blake, then Dean of the Yale School of Medicine, assisted in the organization of the Army Epidemiological Board and became its first President in 1941, serving as consultant to the Secretary of War. Late in 1941 he directed a special commission of the Surgeon General and the Typhus Commission to investigate scrub typhus in New Guinea. Basic principles of control measures were formulated as well as practical measures for the protection of troops. A wealth of valuable material was also acquired for use in investigations in this country, which has become the main center of research on scrub typhus since Dr. Blake's return.

Dr. Richards, who was Professor of Pharmacology at the University of Pennsylvania, undertook direction of the Committee on Medical Research in July, 1941. Three of the outstanding contributions made in preventive and therapeutic medicine include the development of blood plasma for combating shock on the battlefield, the development of penicillin from "a laboratory curiosity to a life-saving agent," and the discovery of new insect repellents which have been successful in bringing under control such insect-borne diseases as malaria and typhus.

Dr. Weed, who is also Director of the Johns Hopkins Medical School, in his work with the National Research Council, played an influential rôle in mobilizing the scientific resources of medicine to meet the emergencies of war. Committees of leading civilian scientists were formed to make recommendations upon request of the Sur-

geons General of the Army and Navy concerning policies and procedures in the prevention and cure of diseases. Dr. Weed is also serving currently as Chairman of the National Advisory Committee of the American Red Cross.

#### NATIONAL MALARIA SOCIETY

The National Malaria Society held its 28th annual meeting in Cincinnati, Ohio, recently. Twenty-four papers were presented at two sessions, one of which was a joint session with the American Society of Tropical Medicine. At the business meeting, the following officers were elected for 1946:

*Honorary President:* J. A. LePrince, Memphis, Tenn.

*President:* Dr. Mark F. Boyd, Tallahassee, Fla.

*President-Elect:* Mark D. Hollis, Atlanta, Ga.

*Vice-President:* J. A. Mulrennan, Jacksonville, Fla.

*Secretary-Treasurer:* Dr. Martin D. Young, Columbia, S. C.

#### MORE ABOUT THE INTERNATIONAL HEALTH ORGANIZATION

Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, has been in Paris as a member of the Technical Preparatory Committee named by the Economic and Social Council of the United Nations to prepare for a conference in June for the purpose of establishing an International Health Organization. This conference is the outgrowth of unanimous approval for "international action in the field of health" at the San Francisco Conference of UN. In approving the declaration, the Social and Economic Council requested that governments send public health officials to the Conference. With Dr. Parran in Paris were Dr. James A. Doull, Director of the U. S. Public Health Service Office of International Health Relations, Dr. H. van Zile Hyde, Senior Surgeon, U.S. P.H.S., and Marcia Maylott of the State Department.

Dr. Parran is the Chairman of an Advisory Health Group of national public health and allied leaders called together by the State Department in October, 1945, which urged prompt United States action toward the establishment of a single, official international health organization. In December, 1945, the Senate passed a resolution requesting the President to take immediate steps toward the convening of an early health conference and formation of an international health organization.

The new International Health Organization, when completed, will have among its first tasks the continuance of the 1944 sanitary conventions, or international agreements, which were adopted for a limited period by 17 nations. These agreements date back to the maritime sanitary convention of 1926 and the aerial sanitary convention of 1933 which were developed with the aid of the International Office of Public Health. This organization is composed of 59 nations signatory to the Paris International Health Convention of 1903 or the 1907 Treaty of Rome. Its work of interchange of information concerning the five "conventional" communicable diseases, smallpox, plague, cholera, yellow fever, and typhus fever, and its work on international sanitary agreements was largely circumscribed after the occupation of Paris. Hence UNRRA and its Health Division undertook to carry on its work.

The second body of experience that will contribute to and presumably be incorporated in that of the new International Health Organization is the League of Nations Health Organization established in 1922. Serving as its Advisory Council, in the absence of a world atmosphere favorable to a single international organization, was the Permanent Committee of the International Office of Public Health, whose ad Interim President is Dr. Hugh S. Cumming, former Surgeon General of the

United States Public Health Service.

The work of the League's Health Organization that was perhaps of greatest significance in guiding the contemplated new organization was the assistance it gave to nations in strengthening their national health services, particularly China and Greece. It also conducted studies of malaria, nutrition, rural hygiene, cancer, and leprosy; it standardized drugs and biologicals and stimulated the international exchange of students and experts. At the beginning of the war it was initiating studies in housing and physical education, but its activities were greatly restricted. Its functions and assets have been temporarily assumed by UN, pending the final launching of the new health organization.

The Pan American Sanitary Bureau, whose director is also Dr. Cumming, has expanded its responsibilities during the war. The June conference is expected to discuss its usefulness to the new international organization in a regional capacity.

#### AMERICAN ACADEMY OF PEDIATRICS STUDY OF CHILD HEALTH SERVICES

According to a report from George St. John Perrott, Chief of the Division of Public Health Methods, U. S. Public Health Service, Washington, a study of child health services has been launched on a nation-wide basis under the joint sponsorship of the American Academy of Pediatrics, the U. S. Public Health Service, and the U. S. Children's Bureau. It has arisen out of a resolution adopted by the Academy "to make available to all mothers and children of the U.S.A. all essential preventive, diagnostic, and curative services of high quality, which, used in coöperation with other services for children, will make this country an ideal place for children to grow into responsible citizens."

As a first step toward this objective



the study has been organized to assemble information on every aspect of public health and medical care for children; it is unique in the sense that it was instigated by and is being carried on by a nationally organized medical group. The responsibility for the actual conduct of the study rests with the Academy, but both the federal agencies are contributing to the success of the program by providing the services of expert medical and statistical personnel. The project is unusual in that it represents a coöperative attempt on the part of private and official medical and health organizations to discover the facts about medical care for children as a basis for future planning.

According to Mr. Perrott, the Academy of Pediatrics has appointed John P. Hubbard, M.D., of Boston, as Director of the study. Katherine Bain, M.D., of the U. S. Children's Bureau staff, and Charles L. Williams, Jr., M.D., and Rollo Britten of the U. S. Public Health Service staff, have been assigned to the Academy by their respective agencies to assist in the study.

One of the fundamental purposes of the study, according to Mr. Perrott, is to stimulate local groups to discover for themselves the needs of their own communities and the existing facilities to meet those needs. A vast amount of data will be required before community planning can be undertaken on a sound basis. Data essential to the study will be collected from hospitals and institutions, official and voluntary health agencies, and physicians and dentists engaged in active practice relating to child health. The information sought will be collected on a state basis by means of personal visits and questionnaire schedules. Each state program will be under the supervision of the state chairman of the Academy of Pediatrics, who with the assistance of an Executive Secretary and Assistants, will be responsible for the administration

and coördination of the study within his state.

Another aspect is the collection of information concerning local official and voluntary health services for children, including well child conferences, school health programs, dental clinics, and public health nursing activities. To secure complete and accurate data relating to these activities, the coöperation of all state, district, and local health departments is essential. The American Academy of Pediatrics has formally requested the support and assistance of all public health officials in insuring the success of the study. This request addressed by a national medical organization of high standing to governmental agencies represents another milestone in coöperative action. It affords an opportunity for the two groups to combine their resources and abilities for the successful completion of an important study.

Considerable progress has already been made. A "pilot" study has been completed in North Carolina which has afforded much valuable experience in testing out proposed procedures, and preliminary steps have been taken in some 30 states and the District of Columbia toward setting up individual state programs. Many state health officers have been approached, and many others will receive information and visits from state chairmen. The rôle of the official health agency is an important one, and the contribution of official groups both in supplying the needed data and in wholehearted promotion of the study should prove of mutual benefit to all organizations involved.

#### SANITATION RESEARCH PROJECT

As a means toward providing increased health protection to railway passengers and employees as well as the general public, the Association of American Railroads has established a

Sanitation Research Project. Under the direction of Abel Wolman, Dr. Eng., Consulting Engineer and Professor of Sanitary Engineering at the Johns Hopkins University, the project will function in collaboration with the Joint Committee on Railway Sanitation, an advisory organization of the Association of American Railroads which has been operating since 1922.

Designed to cover all phases of railway sanitation, such as food handling, water supply and treatment, and disposal of wastes on railway cars and in terminals, the first objective of the project is the development of a sanitary means for the handling and disposal of toilet wastes from passenger-carrying cars.

Dr. Wolman's principal assistants are: Lloyd K. Clark, Project Manager, former Director of the Division of Sanitary Engineering of the North Dakota State Health Department; and William A. Hazlett, Mechanical Engineer, formerly employed by the Bethlehem Steel Company as Test Engineer in the Mechanical Department. Both Clark and Hazlett have been recently relieved from active duty with the Army as Lt. Colonel and Captain respectively.

Offices and laboratories of the project are located at 1103 West Platt Street, Baltimore 23, Md.

#### NATIONAL HEALTH COUNCIL ELECTS OFFICERS

The National Health Council, Inc., New York City, made up of an inclusive group of voluntary health agencies, held its annual meeting on March 22. A program of enlarged services for the Council was discussed by 90 representatives of the 21 member agencies who were present. Dr. George Baehr, President of the New York Academy of Medicine, spoke at the luncheon session on "The Future of the Voluntary Health Movement" and stressed the need for coördination

of the services of the privately supported health societies. Mrs. Eleanor Brown Merrill, retiring President of the Council, presided and reported on the activities of the organization during the past year. She reviewed the projected program of field services of health agencies and the organization of local health councils carried out under a project financially supported by the Rockefeller Foundation. Walter Clarke, M.D., Vice-President and Chairman of the Executive Committee, also reported.

Philip R. Mather, industrialist and philanthropist of Boston, Mass., was elected President of the Council. Mr. Mather has been associated as director or committee member with many social and civic organizations, including the American Social Hygiene Association, the National War Fund, Greater Boston United War Fund, and social agencies in Cleveland, Ohio. Continuing the work of his father, the late Samuel Mather, he worked for and assisted several civic enterprises before he moved to Boston.

Beside Mr. Mather, other officers elected for the coming year include *Vice-President* and *Chairman of the Executive Committee* Ira V. Hiscock, Sc.D., New Haven, Conn.; *Secretary*, Reginald M. Atwater, M.D., New York City; *Treasurer*, Timothy M. Pfeiffer, New York City; members of the new Executive Committee include the four officers of the Council as well as Mason Bigelow, Mrs. Shepard Krech, Mrs. Albert Lasker, Ruth Houlton, R.N., G. Foard McGinnes, M.D., and Robert H. Bishop, M.D. Louis I. Dublin, Ph.D., has been elected Chairman of the Citizens Planning Committee of the Council. Other newly elected officers of this group include: Mrs. Albert Lasker, Vice-Chairman, and Howard A. Rusk, M.D., Secretary.

The National Health Council, which was organized in 1921, includes among its member organizations the National

Tuberculosis Association, The American Cancer Society, The American Red Cross, The American Social Hygiene Association, The American Heart Association, The American Public Health Association, The National Organization for Public Health Nursing, and 14 other national health groups.

#### DIRECTORY OF PLACEMENT AGENCIES FOR INDUSTRIAL HEALTH PERSONNEL

The Health Advisory Council of the United States Chamber of Commerce, Washington, D. C., has recently published a directory of placement agencies for industrial health personnel. It lists 11 agencies, among them the American Public Health Association, handling placement of all industrial health personnel, as well as a number of agencies that place only physicians, dentists, nurses, or chemists. There is also a list of 6 institutions offering courses in industrial nursing.

The foreword of the directory says, "The necessity for peak production during the war stimulated the provision of health service in industry. It confirmed what intelligent industrial managers already knew—that health provision for employees cuts down absenteeism, increases productive capacity, and means dollars to both management and worker."

#### DR. BRISTOL LEADS A.P.W.A. COMMITTEE ON MEDICAL CARE

The American Public Welfare Association, Chicago, has announced the appointment of Leverett D. Bristol, M.D., Dr.P.H., State Commissioner of Health and Welfare, Augusta, Me., as Chairman of the A.P.W.A. National Committee on Medical Care. In accepting the appointment Dr. Bristol stated that the committee will consider the adequacy of medical care for persons in need, the development of wise administrative procedures to cover the medical aspects of public assistance, and a sat-

isfactory program for the care of the chronically ill.

#### PROPOSED BUILDING FOR U. S. ARMY MEDICAL LIBRARY

John F. Fulton, M.D., the President of the Honorary Consultants to the Army Medical Library, has announced that a project has been advanced to ask Congress for ten million dollars for an adequate building for the Army Medical Library. A similar plan under way at the outbreak of the war proposed a building to be erected at a cost not exceeding \$4,750,000. Hearings have been called before the Budget and Congressional Committees to determine whether a new building will be erected on Capitol Hill to house what is said to be the greatest collection of medical books in the world.

According to Dr. Fulton, the Library has been reorganized and it is impossible longer to carry on in the present building which was built in 1887. It is desired that those interested in promoting an adequate building let their opinions be known to their Congressmen or to Dr. Fulton at Yale University School of Medicine, New Haven, Conn.

#### AMERICAN DIPHTHERIA CONSULTANTS CALLED TO EUROPE

Martin Frobisher, Jr., D.Sc., and Franklin H. Top, M.D., D.P.H., have been called as consultants to the Military Government in the European Theatre to advise in connection with the current outbreak of diphtheria. Dr. Frobisher, from the staff of the Johns Hopkins School of Hygiene and Public Health in Baltimore, and Dr. Top, from the Department of Health in Detroit, Mich., will serve under Major General M. C. Stayer, M.C., U.S.A. Dr. Frobisher is a member of the Study Committee on Diphtheria of the Subcommittee on Evaluation of Administrative Practices and has served as the referee for diphtheria cultures for this group.

Dr. Top, who is Medical Director of the Herman Kiefer Hospital in Detroit is also author of the volume, *Handbook of Communicable Diseases*.

#### RED CROSS ESTABLISHES OFFICE OF HEALTH SERVICES

On March 1, 1946, G. Foard McGinnes, M.D., Dr.P.H., Medical Director of the American Red Cross, was named Vice Chairman for Health Services to direct a newly established Office for Health Services. The new office groups together all Red Cross services relating to health and medical activities: the office of the medical director, the nursing, nutrition, and disaster medical service, first aid, water supply and accident prevention. The new consolidated group is expected to conserve both funds and effort and provide maximum benefit as well, in a period of expanding Red Cross health and medical projects provided coöperatively with other agencies.

Dr. McGinnes, who served in the U. S. Marine Corps in the first World War, became national medical director of the Red Cross, having previously served the midwestern area office in a similar capacity. In addition to his M.D. degree from the University of Virginia, he holds M.P.H. and Dr.P.H. degrees from the Johns Hopkins School of Hygiene and Public Health.

#### DR. LOWELL REED IN NEW POST AT JOHNS HOPKINS UNIVERSITY

Dr. Isaiah Bowman, President of The Johns Hopkins University, recently announced the appointment of Lowell J. Reed, Ph.D., as Vice-President of the University, effective March 6, 1946. Dr. Reed will be Chairman of an Executive Committee directing the activities of a General Committee of professional representatives of The School of Medicine, the School of Hygiene, and the Hospital. This committee will make policy recommendations to the Boards of Trustees of the Medical

School and Hospital. Creation of the new position is designed to bring about closer coördination in the development of the Medical Center of which the institutions are a part.

On July 1, 1946, Ernest Lyman Stebbins, M.D., until recently Health Commissioner of New York City, will succeed Dr. Reed as Director of the School of Hygiene and Public Health, a post held by Dr. Reed since 1937.

#### NEW STANDARD METHOD OF COMPILING INDUSTRIAL INJURY RATES

The American Standards Association has completed a new code recording and measuring industrial injury experience on a uniform basis throughout the country, regardless of workmen's compensation laws and rulings. It includes full instructions in the method of compiling accident records so that those of all industries will be comparable in each item, and can thus be developed into a sound statistical basis for future industrial safety codes.

The resulting injury rates may be also used to evaluate the relative need for accident prevention work in different departments of an industry, the seriousness of the accident problem and the progress made in prevention in plant or industry, and the effectiveness of safety activities in plants with comparable hazards.

The new *American Standard. Method of Compiling Industrial Injury Rates* is available from the American Standards Association, 70 E. 45th Street, New York 17. 25 cents.

#### COLONEL DIEUAIDE TO LIFE INSURANCE RESEARCH FUND

On April 1, Colonel Francis R. Dieuaide became scientific director of the Life Insurance Medical Research Fund. Established in June, 1945, by contributions of 148 life insurance companies, this fund makes grants to medical schools and universities for re-

search on heart and related diseases in recognition of the fact that although they are currently the principal causes of death in the United States, relatively little research on their causes and prevention is being carried on.

At the November meeting of the Fund's Advisory Council, grants totaling \$126,000 to 8 medical schools were made. At the recent March meeting additional grants of \$310,000 to 27 institutions were made. It is expected that more than \$3,000,000 will be made available over the next five years. As scientific director, Colonel Dieuaide will investigate applications for funds and make recommendations to the Advisory Council.

Since 1943 Colonel Dieuaide has been chief of the tropical disease treatment branch of the Surgeon General's Office, in which capacity he received the Legion of Merit for his supervision of the treatment of malaria and other tropical diseases. Earlier he was Clinical Professor of Medicine at the Harvard Medical School.

#### DR. KILBOURNE SUCCEEDS DR. COGSWELL

W. F. Cogswell, M.D., for 34 years Executive Officer of the Montana State Board of Health, retired April 1, intending to devote his time to writing a history of the Rocky Mountain spotted fever research work in Montana. He will be retained as a permanent consultant to the Board.

B. K. Kilbourne, M.D., Epidemiologist of the department since 1935, succeeds Dr. Cogswell.

#### COLONEL GOTAAS AWARDED LEGION OF MERIT

In recognition of his services in carrying forward coöperative hemisphere health and sanitation programs, Colonel Harold B. Gotaas, Acting Director of the Office of Inter-American Affairs, has been awarded the decoration of Legion of Merit.

The citation lauded the Colonel for "exceptional meritorious conduct in the performance of outstanding services" in conducting health and sanitation work of the Institute of Inter-American Affairs, an agency of the Office of Inter-American Affairs.

With the Institute since the start of its coöperative work in the other American republics in 1942, Colonel Gotaas has served as Chief Engineer, Director of the Health and Sanitation Division, and as President. He has also been closely connected with coöperative programs of other Office divisions in food supply, education, and transportation.

#### NATIONAL NEGRO HEALTH WEEK

The 32nd National Negro Health Week was sponsored by the U. S. Public Health Service during the week beginning on March 31 and ending April 7.

In 1946, the special objective of this week devoted to promoting better health among Negroes was "A Healthy Home in a Healthy Community: Health Education and Health Services." The U. S. Public Health Service set aside each day for emphasis upon some particular phase of personal, home, or community hygiene. There were talks, lectures, clean-up campaigns, special clinics and poster contests. Although an intensive campaign was planned in most Negro communities to stress this year's special objective, the importance of year-round public health services was also emphasized.

#### MASSACHUSETTS FOOD INSTITUTE

The Massachusetts Dietetic Association and Simmons College will sponsor a Food Institute on "Organization and Management" from June 6 to 8. An exceptionally complete program will include: Problems of Administration, Food Cost and Service Control, Marketing, Maintenance and Sanitation for

Food Departments, Labor and Management Relation, and many other timely subjects.

UNITED STATES-MEXICO BORDER PUBLIC  
HEALTH ASSOCIATION ANNUAL  
MEETING

The United States-Mexico Border Public Health Association held its Fourth Annual Meeting in El Paso and Juarez, Chihuahua, on April 29 to May 1.

LEGION OF MERIT TO J. EDWARD DEHNE

The Legion of Merit has been awarded to Colonel J. Edward Dehne, M.D., Bismarck, N. D., for "exceptionally meritorious conduct . . . untiring efforts and valuable technical ability," when Executive Officer and Assistant Division Surgeon of the European Civil Affairs Medical Group.

Col. Dehne, who already possesses the Purple Heart and Certificate of Merit, is at present continuing on active duty as Chief of Preventive Medicine, Public Health Branch, OMG in Germany, until public health problems related to occupation of Germany are considered under control.

PANAMA CITY PLANS TUBERCULOSIS  
HOSPITAL

Construction of a \$5,000,000 hospital in Panama City for tuberculosis patients was outlined by Octavio Vallarino, Minister of Health and Labor of the Republic of Panama.

Expressing belief in "an ounce of prevention," Vallarino pointed out that tuberculosis cases in Panama were not on the increase. He explained, however, that the construction of the hospital, for which an appropriation had already been approved, would serve to combat the disease through preparedness. Small hospitals are providing excellent care and treatment in less populated cities throughout Panama, he stated.

SOCIETY OF AMERICAN BACTERIOLOGISTS

The Society of American Bacteriologists announces that the following officers have been elected to serve in 1946:

*President*—Dr. James Craigie, Toronto, Canada

*Vice-President*—Thomas Francis, Jr., M.D., Ann Arbor, Mich.

*Secretary-Treasurer*—Leland W. Parr, Ph.D., Washington, D. C.

*Councilors*—M. J. Rosenau, M.D., Chapel Hill, N. C., and Frederick Smith, M.B., Montreal, Que.

HEALTH EDUCATION WORKSHOP AT  
UNIVERSITY OF HAWAII

The popular workshop plan has been adopted for the University of Hawaii summer offerings in health education. The Honolulu Chamber of Commerce made a grant of \$2,500 to the University to bring a mainland specialist to act as leader of a six weeks' intensive course during the 1946 summer session opening June 17.

It is planned to have the school health specialist from the mainland as the leader of the workshop, and to recruit personnel for group leaders from the various agencies in the Hawaiian Islands.

The purpose of the program is to focus community and school attention upon the importance of an adequate school health program, and also to provide school administrators and school health workers with an opportunity to study school health under competent leadership.

Registration is controlled by the University of Hawaii's admission policies, and the program is designed specifically for school principles, school health specialists, school health committee chairmen, school nurses, home economics teachers, and other personnel closely affiliated with the school health program.

In addition to the general sessions, which will feature general discussion, and papers by specialists in various

areas of health, there will be special interest groups. The subjects to be covered are: school health organization and administration, mental health, physical education in relation to health, home and community relations, atypical children (sight, hearing, physically handicapped), school nursing and first aid, foods and nutrition, curriculum and methods.

#### SPANISH EDITION OF CONTROL OF COMMUNICABLE DISEASES

The *Control of Communicable Diseases*, 6th Edition, has been translated into Spanish and is being widely distributed throughout the Latin American Republics by the Pan American Sanitary Bureau. The Association has a limited supply from which copies will be drawn for members of the Association who request them. Our friends south of the border may obtain them in quantity from the Pan American Sanitary Bureau, Washington, D. C.

#### VIRGINIA HEALTH COUNCIL FORMED

Representatives of 37 organizations interested in public health and medical care at a meeting in Richmond, Va., recently decided to establish a state-wide Health and Medical Care Council and named a committee to work out details of the organization. W. T. Sanger, LL.D., President of the Medical College of Virginia in Richmond, will serve as chairman of the committee.

#### PUBLIC HEALTH ASSOCIATION OF PUERTO RICO MEETING

The Public Health Association of Puerto Rico held its fifth annual meeting February 6 to 9 at the School of Tropical Medicine, San Juan. Among the speakers were: Dr. Milton J. Rosenau, Dr. John R. Heller, Jr., Dr. Julio Bustos, Margaret Merrell, Sc.D., and John M. Hepler, C.E. One session was addressed by Governor Rexford G. Tugwell, Hon. Luis Munoz Marin,

President of the Senate, and Dr. Antonio Fernos Isern, Commissioner of Health of Puerto Rico.

#### LT. COL. WEINSTEIN, NEW YORK CITY'S ACTING HEALTH COMMISSIONER

The April *Journal* (p. 426) announced the resignation of Dr. Ernest L. Stebbins as Health Commissioner of New York and the appointment of Dr. Edward B. Bernecker as his successor. It also printed the resolution of protest adopted by the New York Academy of Medicine (p. 433).

On March 13 Dr. Bernecker resigned the post which he had held for nine days and was renamed as Commissioner of Hospitals, a position he had held since 1942. This action came after protests from the New York Academy of Medicine, the Board of Health, and numerous other organizations that Dr. Bernecker had insufficient public health training and experience, although he had been eminently successful as Hospital Commissioner.

Dr. Israel Weinstein, Deputy Commissioner, was named Acting Commissioner. He has been connected with the City Health Department since 1924, most recently as Director of the Bureau of Health Education. He served in both World Wars, in the late war with the 71st Division in France, Germany, and Austria. He was wounded in action, received the Purple Heart and Bronze Star, and was discharged with the rank of Lieutenant Colonel. He holds M.D. and Ph.D. degrees from Columbia University, and an Sc.D. from New York University where he taught preventive medicine for several years.

#### GREAT LAKES INSTITUTE

The sixteenth session of the Great Lakes Institute will be held at College Camp on Lake Geneva, Wisc., July 29 through August 2. The general subject of the Institute will be "Social Work and Social Tensions."

## NEW INDIAN DEPARTMENT OF HEALTH

The government of India established on September 1 a Department of Agriculture, a Department of Health and a Department of Education in place of the existing single Department of Education, Health and Lands, it is reported. Sir Sardar Jogendra Singh, Minister in charge of the conjoint department in the Viceroy's Executive Council, will for the time being take charge of all 3 departments.

## ANNUAL MEETING OF MISSOURI PUBLIC HEALTH ASSOCIATION POSTPONED

In a meeting of the Executive Council of the Missouri Public Health Association held in Jefferson City, Mo., on April 1, it was decided that the 1946 annual meeting of the Missouri Public Health Association would be postponed. It was also decided that an annual meeting of the Association would be held in the spring of 1947, the exact time and place to be determined by the Program Committee.

## VETERANS RETURN TO DUTY WITH ILLINOIS DEPARTMENT OF PUBLIC HEALTH

During the month of March, the following veterans returned to duty with the Illinois Department of Public Health after service in the Armed Forces:

Frank M. Baker, M.D., of Highland Park, County Health Officer in the Division of Local Health Administration

John F. Shrouts, M.D., of Momence, Chief of the Division of Industrial Hygiene

G. Howard Gowen, M.D., of Springfield, Chief of the Division of Cancer Control

## STREPTOMYCIN FOR CIVILIANS

The March 15 *News Notes* of the Technical Information Division, Office of the Surgeon General, United States Army, reports details of a plan for a new streptomycin allocation program established by the Civilian Production Administration for making provision for

civilian uses of the drug. The Army, Navy, Veterans Administration, and U. S. Public Health Service will also receive allocations.

Civilian distribution will be in charge of: Dr. Chester S. Keefer, Evans Memorial Hospital, 65 East Newton, Boston, Mass. All civilian requests and inquiries should be addressed to him. However, physicians are asked not to request streptomycin for cases that are susceptible to the action of sulfonamides, penicillin, and other therapeutic agents. There will for the present be no commercial distribution.

Dr. Keefer, who is Chairman of the Committee on Chemotherapeutic and Other Agents of the National Research Council's Division of Medical Sciences, and who headed the clinical investigation of penicillin, will be in charge of the clinical investigation of streptomycin. This is being carried on by grants-in-aid of \$500,000 contributed in equal shares to the National Research Council by eleven pharmaceutical manufacturers.

The production of streptomycin was approximately 3,000 grams in September, 1945, and nearly 27,000 in March, 1946. Streptomycin, a companion drug to penicillin, is produced in a similar manner, by fermentation and chemical extraction, and, like penicillin requires carefully controlled conditions of temperature, air and sterility. It is expected to prove a valuable supplement in cases where infections do not respond to penicillin treatment, but studies have not yet advanced to the point where the methods of administration or the amenable diseases are definitely known.

## ALASKA EXPANDS TUBERCULOSIS CONTROL

C. Earl Albrecht, M.D., Commissioner of Health of the Territory of Alaska, has announced the plans for the Territorial Department of Health growing out of an appropriation of \$250,000



for tuberculosis control for 1946-1947 recently made by the Extraordinary Session of the Legislature called specifically for the purpose of considering this bill.

Dr. Albrecht points out that this tuberculosis control act was passed unanimously by both houses and provides that the Territorial Department of Health be given authority to arrange means by which all persons in Alaska may be x-rayed, to establish necessary out-patient clinics, to encourage and promote the establishment of adequate sanatorium facilities within the Territory, and care for patients with tuberculosis. It is also provided that the department may obtain surplus property useful to the carrying out of the program, may employ trained personnel, may pay the costs of care and incidental expenses for resident Alaskans, and temporary costs of care and transportation for nonresidents until such time as they can be transferred to the jurisdiction of their residence. The department may establish standards for the care of all persons receiving treatment under the act, make a survey of the various hospital facilities, and may establish as many tuberculosis wards in each hospital as may be deemed practical and advisable.

## PERSONALS

### Central States

WILLIAM Z. FLUCK has resumed his duties as engineer in the Industrial Hygiene Unit of the Wisconsin State Board of Health, following 2 years' work in industrial hygiene in the United States Army. He was one of the pioneers in the industrial hygiene program in Wisconsin, having helped organize the Division in 1936.

### CHANGES IN HEALTH PERSONNEL IN KANSAS:

LEON BAUMAN, M.D., has been appointed full-time Health Officer of Labette County, succeeding OSCAR HARVEY, M.D.,<sup>†</sup> Parsons, who was transferred by the U. S. Public Health Service to Sioux Falls, So. Dak.

DONALD E. BUX, M.D., Manhattan, who was recently released from military service, has been named Health Officer of Cherokee County.

FERRIN B. MORELAND, PH.D., Iowa City, has been placed in charge of the Department of Chemistry, Division of Public Health Laboratories, Kansas State Board of Health.

RICHARD T. PAGE,\* P.A. Sanitary Engineer, has been appointed Industrial Hygiene Consultant for U. S. Public Health Service District No. 7. Six of the 9 States in the District and 2 cities, St. Louis and Kansas City, have industrial hygiene units.

GEORGE A. POE, M.D., Port Clinton, O., is the new Health Commissioner of Ottawa County, O., succeeding ARTHUR B. REAM, M.D., of Batavia, who has resigned to engage in private practice.

LAWRENCE W. SMITH, M.D., is now associated with Commercial Solvents Corporation of Terre Haute, Ind., as Medical Director. Previously, Dr. Smith was Professor of Pathology at Temple University School of Medicine and Director of Laboratories at Temple University Hospital.

### Eastern States

HARRISON S. COLLISI, M.D., who retired from the U. S. Army with the rank of Colonel in December, 1945, has become Medical Director of the Planned Parenthood Federation of America, Inc., effective March 4. As Commanding Officer of the 187th General Hospital at St. Quentin and

Mirecourt during the recent war, he received the Bronze Star for outstanding service.

ROGER A. CRANE has been appointed to the Directorship of the Commonwealth Fund's Division of Publications, following the death of PORTER R. LEE, JR. Mr. Crane has been Distribution Manager of the Division for about 15 years. He is succeeded in this position by ELIZABETH Q. PETERSON, who brings advertising experience to her new work.

MORTON L. LEVIN, M.D.,\* former Assistant Director of the Division of Cancer Control of the New York State Department of Health, has been appointed provisionally to the position of Director. For the past 10 years, Dr. Levin has devoted himself exclusively to the medical, educational, and public health aspects of cancer control.

#### CHANGES IN HEALTH PERSONNEL IN MASSACHUSETTS:

JOHN J. POUTAS, M.D., M.P.H.,\* has resumed his duties as Director of the Division of Local Health Administration in the Massachusetts Department of Public Health having returned from overseas duty in the European Theater. Prior to returning to this country, Lt. Col. Poutas served as Chief of the Epidemiology Branch of the Preventive Medicine Division in the Office of the Theater Chief Surgeon. His duties will include supervision of the 8 district offices of the department and the nursing, nutrition, social service and sanitation bureaus.

ROY F. FEEMSTER, M.D.,\* recently Acting Director of the Division of Local Health Administration, Massachusetts Department of Public Health, has returned to his former

position as Director of the Division of Communicable Disease.

DWIGHT J. MULFORD, PH.D., has been appointed Laboratory Chief of the Blood Processing Laboratory in the Division of Biologic Laboratories, Massachusetts Department of Public Health. This Laboratory is especially designed for the fractionation of blood plasma into albumin, immune serum globulin, fibrin foam, fibrin film and other fractions of value in medicine, surgery and public health.

OTTO C. YENS, M.D., has been appointed Supervisor in charge of Crippled Children Services in the Massachusetts Department of Public Health. Prior to his appointment, Dr. Yens held the rank of Lt. Colonel in the Medical Service of the 117th Evacuation Hospital, U. S. Army.

RUTH ALIDA THOMAS, M.A., C.P.H.,† has joined the staff of the Bureau of Health Information, Massachusetts Department of Public Health. Miss Thomas was formerly Assistant Professor in the Department of Hygiene and Bacteriology, Smith College. She has also served as Consultant in the Medical Intelligence Branch of the Preventive Medicine Division, Office of the Surgeon General, U. S. Army.

ALEXANDER A. ROBERTSON,† formerly Chief Sanitary Officer with the Newton Health Department, is now serving with the Massachusetts Department of Public Health as Supervising Health District Sanitary Officer.

JOHN B. SKINNER, M.S., has been appointed Director of the Division of Occupational Hygiene of the Massachusetts Department of Labor and Industries. Mr. Skinner has been an engineer with

\* Fellow A.P.H.A.

† Member A.P.H.A.

the department since 1941. He succeeds MANFRED BOWDITCH,<sup>†</sup> who retired from State service to assume the position of Field Director of the Saranac Laboratory, Saranac Lake, N. Y.

ELNA I. PERKINS<sup>†</sup> has joined the staff of the Greenwich, Conn., Tuberculosis and Health Association as Health Education Director. She was formerly employed by the Industrial Hygiene Division of the U. S. Public Health Service, as Health Education Specialist.

M. J. PLISHNER\* joined the staff of the New York Tuberculosis and Health Association on April 1, after 4 years of Army service. He was formerly associated with the Tuberculosis Associations in Passaic County, N. J., and Brooklyn, N. Y., as well as the National Tuberculosis Association.

JOHN B. SKINNER has been appointed Director of the Massachusetts Division of Occupational Hygiene. Mr. Skinner has been with the division for the last 5 years as engineer.

LEONID S. SNEGIREFF, M.D.,<sup>†</sup> Trenton, N. J., has been appointed Director of the Bureau of Preventable Diseases of the New Jersey State Department of Health. The new bureau includes divisions covering tuberculosis and venereal disease control, maternal and child health, preventive medicine, industrial and dental health and health education. Dr. Snegireff was formerly Medical Assistant in the Department of Health.

### Southern States

ROBERT W. BALL, M.D.,\* Columbia, S. C., recently released from the army, has returned to his position as Director of the Division of Maternal and Child Welfare of the South

Carolina State Department of Health. HILLA SHERIFF, M.D.,\* also of Columbia, who served as Director of the Division in the absence of Dr. Ball, will become Associate Director. MAULDIN J. BOGGS, M.D.,<sup>†</sup> of Abbeville, S. C., who has been Health Officer of McCormick and Greenwood Counties with headquarters at Greenwood, has been appointed Health Officer for Abbeville County, with offices in Due West.

DAVID M. COWGILL, M.D.,\* formerly Health Officer in Amarillo, Texas, has been appointed District Health Officer with the Alaska Territorial Department of Health, with offices in Anchorage.

C. B. DAVIS, M.D.,<sup>†</sup> designed February 1 as Director of the North Carolina Division of Industrial Hygiene to enter private practice in Wilmington, N. C. He has been succeeded by ORRO J. SWISHER, JR., M.D., who held the rank of Major, serving in the Pacific and in the European theaters. After graduation from the Medical School of Ohio State University in 1927, he served as a County Health Officer in Tennessee and Director of the Division of Industrial Hygiene in the State of West Virginia.

WILLIAM L. FLEMING, M.D.,<sup>†</sup> Research Professor of Syphilology of the University of North Carolina School of Public Health, Chapel Hill, since 1939, resigned on December 31, to become Chief of the Genito-infectious Clinic and Associate Professor of Medicine at the Boston University School of Medicine, Boston, effective January 1. HAROLD J. MAGNUSON, M.D., Baltimore, Passed Assistant Surgeon, U. S. Public Health Service, has been appointed Research Professor of Experimental Medicine in the School of Public Health, succeeding Dr. Fleming. Dr. Magnuson has been first assistant to HARRY EAGLE, M.D., in the Experimental

\* Fellow A.P.H.A.

<sup>†</sup> Member A.P.H.A.

Syphilis Laboratories at Johns Hopkins University since 1943.

#### CHANGES IN HEALTH PERSONNEL IN FLORIDA:

THOMAS G. FAISON, M.D., recently released from the U. S. Army, has been appointed Director of the Bay County Health Department with headquarters at Panama City. Dr. Faison assumed his duties on January 28.

AUBREY Y. COVINGTON, M.D., has been appointed Director of the Bradford - Clay - Union County Health Unit on January 15, with headquarters at Starke. He was recently released from the United States Army.

C. M. SHARP, M.D., recently released from the U. S. Public Health Service, was appointed Director of the Bureau of Tuberculosis Control and assumed his duties on March 11.

E. G. GREEN,† Educational Director of the Oklahoma County Health Association, Oklahoma City, has been appointed Acting Executive Secretary of the Association. ARTHUR H. GERMAN,† who was Executive Secretary for 7 years, resigned to become consultant to the fund raising department of the Midwest Division of the American Red Cross with offices in St. Louis.

WILLIAM GROSSMAN, M.D.,\* of Richmond, Va., Director of the Bureau of Communicable Disease Control, returned to the Virginia State Department of Health from military service as of January 1.

FREDERICK C. KLUTH, M.D.,† U. S. Public Health Service, who has served as Venereal Disease Control Officer for Charleston and Kanawha County for the past 3 years, has

been transferred to Columbus, O., where he is in charge of a rapid treatment center.

COL. M. J. MACKLER, SN.C., A.U.S.,\* has returned to his position as Director and Secretary-Treasurer of the Tampa, Fla., Housing Authority, after 4 years in the Army during which he served more than 2 years overseas in England, Ireland, Scotland and Germany.

EDWARD B. RICKEY, M.D., of Shafter, Tex., has been appointed Director of the Jim Wells-Duval County Health Unit with headquarters in Alice, Tex.

WALTER E. VEST, M.D., of Huntington, W. Va., at a meeting of the Public Health Council of West Virginia in Charleston, January 7, was reelected President for a fifth consecutive 2 year term. He has been a member of the Council since 1933 and has served as its President since 1937.

#### CHANGES IN HEALTH PERSONNEL IN WEST VIRGINIA:

DON V. HATTON, M.D., Williamson, has been appointed by the Public Health Council as full-time County Health Officer for Mingo County. He succeeds SIXTUS G. BANDO, M.D., who is taking a course in public health at Johns Hopkins University, Baltimore.

CHARLES SCOTT MCKINLEY, M.D.,† Charleston, Director of the Bureau of Industrial Hygiene of the West Virginia State Health Department since May 1943, has resigned to accept appointment as Medical Director and Plant Physician for the Bakelite Company at Boundbrook, N. J., effective February 1.

LEOPOLD E. WEXBERG, M.D., New Orleans, La., has been appointed Chief of the Bureau of Hygiene of the District of Health Department. Dr. came to the United States

\* Fellow A.P.H.A.  
† Member A.P.H.A.

after 19 years of practice in Vienna. He succeeds JOHN F. OWEN, M.D., who resigned.

### Western States

JULIUS B. ASKEW, M.D., on assignment to the California Department of Public Health by the U. S. Public Health Service, has been appointed Chief of a new Bureau of Hospital Inspections.

### CHANGES IN CALIFORNIA STATE HEALTH DEPARTMENT STAFF:

MALCOLM H. MERRILL, M.D.,\* San Francisco, has been appointed Deputy Director of the California Department of Public Health, continuing as Chief of the Division of Laboratories, a position he has held since 1941. Dr. Merrill joined the department in 1937 as Chief of the then newly formed Bureau of Venereal Diseases.

ROBERT DYAR, M.D.,\* Stockton, recently released from the Army Air Force, is now Chief of the Division of Medical Services. Prior to his entering service in April, 1942, Dr. Dyar directed the joint syphilis epidemiologic study in the San Joaquin Local Health District, which was sponsored by the International Health Division of the Rockefeller Foundation, the Health District, and the State Department of Public Health.

PHILIP K. GILMAN, M.D., San Anselmo, President of the California Medical Association, has been appointed Chief of Hospital Surveys of the Department.

CHARLOTTE FERRY, Industrial Hygiene Nursing Consultant for the southern half of California, has taken a year's leave of absence to go to China with

UNRRA as a Public Health Nursing Consultant.

CHARLES C. HEDGES, M.D., recently of Santa Rosa, Calif., has been appointed Director of the Bureau of Communicable Diseases in the West Virginia State Department of Health, Charleston, succeeding J. T. DUNCAN, M.D., who resigned several months ago.

HAROLD R. HENNESSY, M.D.,† of Los Angeles, Calif., has accepted an appointment as Assistant Secretary of the Council on Industrial Health, American Medical Association. During the past 5½ years he has been in the military service and associated with the army public health program. Prior to going overseas, he was Chief of Industrial Medicine, Headquarters Ninth Service Command. He spent 2 years in Europe during which period he was assigned to military government public health duties in England, France, Belgium, and Germany and held the rank of Lieutenant Colonel in the Medical Corps.

BYRON HUBBARD, Assistant Industrial Hygiene Chemist, has been transferred to Los Angeles to assume responsibility for the chemical analytical work in the new tri-unit industrial hygiene laboratory.

A. T. ROSSANO, JR.,† has been transferred from duty as Director of the Division of Industrial Hygiene in Colorado to assume Directorship of the Industrial Hygiene Division, Alabama State Health Department. ROBERT J. OWENS † has succeeded Mr. Rossano as Director of the Division, having returned from military leave of absence.

FRANK M. STEAD,\* Senior Industrial Hygiene Engineer, has left the Bureau of Adult Health to become Chief of the Division of Environmental Sanitation of the California Department of Public Health.

\* Fellow A.P.H.A.

† Member A.P.H.A.

## Foreign

MAJOR JOSEPH HIRSH,† Director of Medical Administration Service for the hospitals in New York State, Veterans Administration, 299 Broadway, New York, N. Y., recently returned from Italy where he was Chief Preventive Medicine and Staff Officer, Headquarters, 12th Air Force.

MAJOR MAX C. IGLOE, M.C., U. S. Army,† serving as Chief of Public Health Sub-Section, G-5 Section of the Headquarters Third Army, has received the Bronze Star Medal "for meritorious service during the period August 1, 1944, to May 8, 1945. The professional skill and resourcefulness he displayed, his loyal untiring devotion to duty, reflect great credit upon himself and the military service." Major Igloe was further honored in Paris in October by General Charles de Gaulle who awarded him the Croix de Guerre with Silver Star "for exceptional war services rendered during the liberation of France."

## Death

WILLIAM DREYFUS, D.Sc.,† an authority on disinfectants and sanitation died March 13 at the age of 77. Dr. Dreyfus completed 40 years of A.P.H.A. membership in 1945 and recently received his 40 year Certificate. He was Director of the Chemical Dept. of the West Disinfecting Company of Long Island City, N. Y., one of the Sustaining Members of the Association. Born in Switzerland, where he studied at the Universities of Zurich and Geneva, he came here in 1899 after he had worked in the coal-tar distillation industry in England. Dr. Dreyfus

was chiefly known in this country for his disinfectant standardization method, and it was as a result of his efforts that the hygienic laboratory method of testing disinfectants was adopted.

## CONFERENCES AND DATES

- American College of Physicians. Convention Hall, Philadelphia. May 13-17.
- American Home Economics Association. Cleveland Public Auditorium, Cleveland, O. June 24-27.
- American Medical Association. San Francisco, Calif. July 1-5.
- American Public Health Association — 74th Annual Meeting. Cleveland, O. November 12-14.
- American Water Works Association—1946 Conference. St. Louis, Mo. May 6-10.
- Pacific Northwest Section—Gearhart Hotel, Gearhart, Ore. May 23-24.
- National Conference on Social Work. Buffalo, N. Y. May 19-25.
- National Education Association. Buffalo, N. Y. July 1-5.
- National Probation Association. Buffalo, N. Y. May 17.
- National Tuberculosis Association—Annual Meeting. Buffalo, N. Y. June 11-13.
- New York State Association of Public Health Laboratories—Annual Meeting. State Laboratory, Albany, N. Y. May 17.
- New York State Association of Health Officers and Public Health Nurses—Annual Conference. Grand Union Hotel, Saratoga Springs, N. Y. June 25.
- Society of American Bacteriologists—1946 Annual Meeting. Hotel Book-Cadillac, Detroit, Mich. May 21-24.
- Utah Public Health Association—Annual Meeting. Salt Lake City, Utah. May 31-June 1.

\* Fellow A.P.H.A.

† Member A.P.H.A.

## Publications of the A.P.H.A.

An Appraisal Method for Measuring the Quality of Housing: A Yardstick for Health Officers, Housing Officials and Planners. Part I. Nature and Uses of the Method. 1945. 71 pp. \$1.00.

Basic Principles of Healthful Housing. 2nd ed., 1939. Report of the Committee on the Hygiene of Housing. 32 pp. \$.25.

Community Organization for Health Education. Report of the Committee. Clair E. Turner, Chairman. 1941. 136 pp. Price, \$.09.

Control of Communicable Diseases, The. 6th ed., 1945. Size 4 3/4" x 7 3/4". 149 pp. \$.35.

Diagnostic Procedures and Reagents. Technics for the Laboratory Diagnosis and Control of the Communicable Diseases. 2nd ed., 1945. \$4.00.

Health Practice Indices. A collection of charts showing the range of accomplishment in various fields of community health service. 1945. 87 pp. Free.

Methods for Determining Lead in Air and in Biological Materials. 1944. 41 pp. \$.75.

Occupational Lead Exposure and Lead Poisoning. 1943. 67 pp. \$.75.

Painin on Measles. By P. L. Panum (translation from the Danish). Delta Omega ed., 1940. 111 pp. \$.250.

Shellfish and Shellfish Waters, Recommended Methods of Procedure for Bacteriological Examination of. 1944. 12 pp. \$.25.

Spanish Summary of 8th edition (1941) of Standard Methods for the Examination of Dairy Products 1945. 52 pp. Free to Latin American countries. \$.10 in the United States.

Standard Methods for the Examination of Dairy Products—Microbiological, Bioassay and Chemical 8th ed., 1941. 288 pp. Paper, \$1.75.

Survey Form for Milk Laboratories. Indicating Conformity with Standard Methods for the Examination of Dairy Products (8th ed.). May, 1944. Single copies 10¢; 50 copies \$1.00; 100 copies \$1.50; 1,000 copies \$10.00.

Swimming Pools and Other Public Bathing Places, Recommended Practice for Design, Equipment and Operation of. 1942. 56 pp. \$.50.

Transactions of the Eighth Institute on Public Health Education (1941). 1942. \$1.50.

Vital Statistics Directory. Compiled by the Vital Statistics Section. 3d ed., 1945. \$.75.

## Reprints from the American Journal of Public Health

Changing Challenges of Public Health. C.-E. A Winslow. [March, 1945.] 8 pp. 15c.

Content and Administration of a Medical Care Program. Six explanatory papers by Joseph W. Mountin, I. S. Falk, Nathan Sinai, J. Roy Hege, Graham L. Davis, George St. J. Perrott, and the Official Statement on Medical Care in a National Health Program. [December, 1944.] 40 pp. 25c.

Desirable Minimum Functions and Organization Principles for Health Activities. An official Declaration of the American Public Health Association. [1943.] 12 pp. Single copies free. Three or more copies 5c each.

The Evolving Pattern of Tomorrow's Health: JOSEPH W. MOUNTIN, C.-E. A. WINSLOW, HENRY F. VAUGHAN, and REGINALD M. ATWATER. [December, 1943.] 24 pp. 25c.

How to Find What Health Education Materials You're Looking For. [Aug., 1944.] 4 pp. 10c.

Improvement of Local Housing Regulation Under the Law. [Nov., 1942.] 16 pp. 25c.

Laboratory Methods Used in Determining the Value of Sulfadiazine as a Mass Prophylactic Against Meningococcal Infections. By COLONEL DWIGHT M. KUHN, M.C., USA, and CAPTAIN HARRY A. FELDMAN, M.C., AUS. [December, 1943.] 8 pp. 10c.

Landmarks of 1944. Six papers by Abel Wolman, Wilton L. Halverson, William P. Shepard, Hugh R. Leavell, C.-E. A. Winslow, Louis I. Dublin. [January, 1945.] 28 pp. 25c.

Medical Care in a National Health Program. An Official Statement of the American Public Health Association Adopted October 4, 1944. [December, 1944.] 6 pp. Single copies free. Five or more copies 5c each.

Protection of Water and Food Supplies in An Emergency. G. E. ARNOLD. [Oct., 1942.] 8 pp. 15c.

Pyrex Suspensions in Turbidimetric and Colorimetric Determinations: Standards of Comparison for Bacterial Suspensions and in the Resazurin Test. By FRANCIS J. HALLINAN. [February, 1943.] 4 pp. 10c.

Public Health as an International Problem. By RAYMOND B. FOSDICK. [Nov., 1944.] 8 pp. Single copies free. Five or more copies 5c each.

Surveys of the Nutrition of Populations: Description of the Population, General Methods and Procedures, and the Findings in Respect to the Energy Principle (Calories) in a Rural Population in Middle Tennessee. JOHN B. YOUNG, E. WHITE PATTON, and RUTH KERN. [December, 1942 and January, 1943.] 24 pp. Uncovered 20c, covered 25c.

Typhoid Vaccine Studies: Revaccination and Duration of Immunity. By DON LONGFELLOW and GEORGE F. LUIFOLD. [Nov., 1940.] 7 pp. 15c.

Ventilation and Atmospheric Pollution. E. R. HAYHURST, Chairman. [July, 1943.] 7 pp. 15c.

Vitamin B Complex. II. Status of Assay Methods and Need of These Substances by Man. (Report of the Committee on Assay of Foods.) [July, 1944.] 12 pp. 25c.

### For Free Distribution

Bibliography on Public Health and Allied Subjects, 1945 (23rd Ed.). 28 pp.  
Brief Description of the American Public Health Association.

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# American Journal of Public Health

## and THE NATION'S HEALTH

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Number 6

### Present Position of DDT in the Control of Insects of Medical Importance\*

FRED C. BISHOPP, PH.D.

*Assistant Chief, Bureau of Entomology and Plant Quarantine, Agricultural  
Research Administration, U. S. Department of Agriculture,  
Washington, D. C.*

MANY of the early predictions regarding the wonder insect killer, DDT, have come true. As an agent for curing all ills involving insects, DDT has failed. But from the beginning few, if any, in the insecticide "know" expected that much. Those who have been concerned with the development of this type of weapon for combating our horde of insect foes have long since learned that insecticides are decidedly specific—what will bring the agony of death to one insect in a few minutes is laughed off by another. The reasons for this are little understood and await a more exhaustive study of insect structure, physiology, and toxicology. It is hoped that the great surge of widespread interest aroused by war needs successfully met by entomological research and application may provide the incentive, as well as the necessary financial backing, to learn more of these secrets. Such knowledge may accelerate

the development of other and perhaps more effective weapons with which to fight insects and insect-borne diseases.

#### TOXICITY TO MAN AND HIGHER ANIMALS

We must see both sides of the picture, and we will first discuss the limitations of this insecticide. Perhaps foremost in our minds is the question of its toxicity to man and other higher animals.

Through the vigorous and well planned research directed by the late Herbert Calvery of the Food and Drug Administration, Paul A. Neal of the National Institute of Health, and Robert Kehoe of the Kettering Institute, a vast amount of information on the toxicology and pharmacology of DDT and various associated materials has been made available. To this the investigations of G. R. Cameron and other British workers have added materially. From the work of these pharmacologists<sup>1-3</sup> the following very general conclusions can be drawn:

\* Special Review Article, prepared at the request of the Editorial Board.



1. DDT is toxic to all higher animals, but its acute toxicity is much less than that of some of the arsenicals and nicotine which are used commonly as insecticides.

2. The median lethal dose varies widely with species and with individuals, ranging (in milligrams per kilogram of body weight) from 150 to 250 for mice, 150 to 250 for rats, 300 to 500 for guinea pigs, 300 to 500 for rabbits, 100 to 300 for cats, 150 to 300 for dogs, over 1,300 for chickens, over 200 for monkeys, over 300 for cows, over 300 for horses, about 1,000 for goats, and about 1,000 for sheep. For comparison, a few figures follow on the median lethal dose of other insecticides for rabbits: Arsenic trioxide 15 to 30, sodium arsenate about 50, lead arsenate (basic) 180, lead arsenate (acid) 100, sodium fluoride 200, and sodium fluosilicate 120.

3. Quantities much below the lethal dose if given daily may cause death before the amount of a single acute lethal dose is reached.

4. DDT in powder form applied to the skin is not toxic.

5. DDT in oil solutions when absorbed through the skin causes toxic effects.

6. DDT is not promptly and completely eliminated when ingested or absorbed, and when given in considerable doses is stored in the tissues, especially in the fat.<sup>10</sup> Far more than a lethal dose may thus be stored with no apparent ill effect on the animal.

7. Following ingestion in appreciable quantities, DDT is excreted in the milk, presumably associated with the fat globules.<sup>10, 11</sup>

8. DDT is a nerve poison, as indicated by the early appearance of muscular tremors and other symptoms.

9. DDT shows little or no sensitizing action. Even though marked muscular tremors appear, complete recovery occurs promptly when dosing ceases.

10. *When used as recommended* for the control of human parasites and household insects, DDT insecticides are not harmful to human health. This includes DDT in aerosols and the several other forms in which it is recommended.

DDT must not be allowed to get into foods or to be ingested accidentally. Prolonged exposure of the skin to 2.5 or 5 per cent oil solutions should be avoided, and solutions containing 25 per cent or more of DDT should be removed with soap and water immediately.

There is no known antidote for DDT poisoning. In the event of ingestion by man, the Industrial Hygiene Research Laboratory, National Institute of Health, advises that a physician be called at once. Medical attention usually consists of stomach lavage, followed by a saline cathartic. If tremors or other nervous symptoms develop the Industrial Hygiene Laboratory advises symptomatic treatment consisting of the administration of phenobarbitol which allays the reactions.

One of the outstanding characteristics of DDT is its persistence. In fact, this is perhaps the major element in making it superior to many other insecticides. This persistence, however, makes it necessary to use care when applying it on crops or products intended for food or feed. Although no tolerance for DDT residues on fruits and vegetables has been set officially, the Food and Drug Administration has indicated a tentative figure of 7 p.p.m., the same as for lead and fluorine. The Bureau of Entomology and Plant Quarantine does not recommend DDT for use on cabbage or similar vegetables after the heads or other edible parts are formed. Likewise, that bureau does not recommend its use on alfalfa, corn, or other crops to be fed to stock, especially dairy animals, until more is learned of the fate of small amounts ingested, especially with fatty materials.

The effectiveness of DDT against a number of agricultural pests, such as cabbage caterpillars, codling moth of apples, the tomato fruitworm, sucking insects on alfalfa and other forage crops, the European corn borer, the vetch bruchid, and the pea weevil, is so outstanding that the toxicity of DDT residues must be determined as soon as possible.

#### TOXICITY OF DDT TO PLANTS

DDT has been found to be very effective in killing Japanese beetle

larvae in the soil when applied at the rate of 25 lbs. per acre. But even this amount applied to some types of soils adversely affects the growth of a few plants, such as bush beans, soybeans, and rye, while other species of plants are unaffected by much heavier applications. Plant injury is more apparent on soils lacking in humus.

In general, plants show no injury when DDT is applied to them. Squash, cucumbers, and other cucurbits, however, are injured by DDT used either as a dust or spray. This is especially true of young plants.

#### EFFECT OF DDT ON BENEFICIAL FORMS OF LIFE

Another difficulty encountered with DDT is its destructive effect, when used in excessive quantities, on birds, fish, frogs, crayfish, crabs, and other beneficial forms of life. Coöperative studies carried out by the Fish and Wildlife Service<sup>12</sup> and the Bureau of Entomology and Plant Quarantine, and by other agencies, have shown that oil solutions of DDT applied by airplane at the rate of 5 lbs. of DDT per acre to forest areas while birds are nesting may destroy a large percentage of them. This is probably caused by the birds feeding freely on the insects dying with DDT tremors. When applied at the rate of 2 lbs. per acre or less, apparently birds are not affected. Fish are rather susceptible to this insecticide, and some are killed by dosages of 1 or 2 lbs. of DDT per acre and a few by as little as  $\frac{1}{2}$  lb. Anopheline larvae, however, can be killed by 1/10 lb. or less per acre. In fact, in laboratory tests, as little as 1 part per hundred million parts of water killed them. DDT emulsions are more destructive of fish than are oil solutions.

Considerable anxiety has been expressed regarding the effect of DDT on beneficial insects, including the honeybee. Many of our insect friends, such

as the lacewings, wasp and fly parasites of pest insects, and some ladybeetles, are even more susceptible to DDT than are some of our insect foes. We must remember, however, that beneficial insects are destroyed when other insecticides are used but probably not to the same degree. Fortunately the honeybee is not extremely susceptible to DDT and our present feeling is that it may be less detrimental to bees than lead arsenate.

If the formulations and time and method of application are carefully chosen, minimum dosages and number of applications are used, and the material is employed only when needed to combat a pest for which it is known to be an effective remedy, it is confidently believed that no serious consequences will result from the use of DDT. Probably the greatest hazard is from its use over large areas without guidance.

On the other side of the ledger, we find much in favor of DDT, and this is especially true in the field of medical entomology. Against such pestiferous and disease-carrying insects as mosquitoes, flies, fleas, bedbugs, and sand flies it is remarkably effective. Cockroaches and ticks and a number of other household pests also yield reasonably well to DDT if properly applied.

Interest in the use of DDT in combating insects is indicated by the numerous publications on that subject. A series of bibliographies compiled by Roark<sup>13</sup> contained references to a total of 973 publications, all but 8 of which were issued from January 1, 1943, to June 30, 1945. Since much of the research information relating to military uses of DDT was withheld for security reasons, the number of articles on this subject issued during the last half of 1945 and throughout 1946 will doubtless show a considerable increase.

#### STATUS OF SUPPLY

DDT is now being produced in com-

mercial quantities by about 13 companies in the United States, and a number of laboratories are making small lots mainly for experimental purposes. It is being manufactured on a relatively small scale in a number of other countries, notably in Switzerland, England, and Portugal. A large number of companies are engaged in processing, formulating, packaging, and distributing DDT insecticides. The production of technical DDT in the United States during the later months of the war reached 3,000,000 lbs. monthly, practically all of which was purchased by the armed forces. The production capacity apparently exceeds present demands, so that no shortage of this material is anticipated during 1946. On January 28, 1946, it was removed from export license control.

The production of DDT was supported and encouraged by the War Production Board during the war. The supplies were allocated under conservation or allocation Order M-340, effective January 1, 1944, and under Order M-300, Section 25, on July 5, 1944. In June, 1945, supplies in excess of military needs were made available for experimental purposes. On July 26, 1945, the WPB issued a statement that in August, 1945, limited quantities of DDT would be made available for civilian and agricultural uses, and on August 31, 1945, the WPB revoked the allocation order. During the period that this order was in effect approximately 500,000 lbs. of technical DDT were used for experimental purposes in military, civilian, and agricultural fields, mainly by governmental agencies.

DDT was first made available on supply lists of the Army in May, 1943 (QMC stock No. 51-I-173), and on those of the Navy in January, 1944. The Army Schedule of Supplies toward the close of the war carried nine DDT items.

#### FORMS IN WHICH DDT IS USED

DDT is employed against insects mainly in four forms—powders or dusts, solutions, emulsions, and suspensions. The chemical DDT is not in suitable form for use as an insecticide. It is a whitish, slightly gummy, rather coarse crystalline material with a setting point about 88° C. It is practically insoluble in water, but is readily dissolved in many organic solvents such as acetone, xylene, and petroleum oils.<sup>14</sup>

Most of the DDT employed in preparing insecticides is the so-called technical grade. This consists of about 70 per cent of the para-para'isomer (1-trichloro-2,2-bis (*p*-chlorophenyl) ethane), 25 per cent of the ortho-para isomer, and the remainder impurities. The para-para'isomer is much more active insecticidally than the ortho isomer. A semirefined DDT (melting point 103° C.) produced mainly by one process is known as the aerosol grade, and is used mainly in the aerosol bombs.

Immediately following the release of DDT for civilian use, most of the material offered for sale to the public was a kerosene solution containing from 0.1 to 5 per cent of DDT. Soon other preparations—dusts, emulsions, and water-dispersible (or wettable) powders—became available. Probably the last will be the most popular because it can be used on plants, on livestock, and as a residual spray against flies and mosquitoes in barns, outbuildings, gardens, and on porches. This season it is anticipated that many commercial materials containing DDT will be available to the public. No doubt some variation in effectiveness of different formulas will be observed even against the same species. These variations will be due, in part at least, to the kind and amount of diluent or conditioner used, the fineness of the DDT and conditioner, the kind and amount of solvent and other accessory materials incorporated, and, in the case of aerosols, the

kind and amount of propellant employed. However, only one propellant, Freon-12 (dichlorodifluoromethane), is used under the Department of Agriculture license. The efficiency of DDT will also be influenced by the kind of applicator used, the amount applied, the temperature, exposure of treated surfaces to sunlight, wind, rain, dust and oil vapors, and other factors.

#### LABELING, COLORING, AND PACKAGING

Efforts to have insecticides containing DDT properly labeled are being put forth by the Insecticide Division of the Production and Marketing Administration, U. S. Department of Agriculture, which is responsible for the enforcement of the Insecticide Act, and state agencies. Many difficulties have been encountered, but are being overcome through the cooperation of industry and government. Under the Insecticide Act kerosene solutions containing any amount of DDT can be labeled as containing 100 per cent of active ingredients. If, however, a claim is made that the insecticide contains DDT, the Insecticide Division holds that the content must be sufficient to give effective results against the particular insect for which claim is made or the percentage of DDT must be stated. In order to use insecticides containing DDT most effectively, it is desirable that the actual DDT content be stated on the label in all cases. A release of the Insecticide Division dated September 1, 1945, discusses this matter. The question of safety in labeling and handling DDT is dealt with in a release of the Food and Drug Administration of November 5, 1945. The position is taken that the degree of toxicity of DDT does not place it with the caustic poisons and hence labeling it "poison" with skull and crossbones is not necessary. The addition of coloring as a protection against accidental use of DDT in foods is Advised by the Food and Drug Ad-

ministration and other agencies, and such coloring is required in certain states.

DDT is so stable that it is unlikely to break down seriously in storage. However, technical DDT may become lumpy and therefore unsuitable for certain uses. Packaging in iron containers is conducive to some decomposition, as iron compounds act as catalysts, especially at high temperatures. One product of the decomposition is hydrochloric acid.

#### METHODS OF ANALYSIS

Considerable attention has been directed to the development of methods suitable for the analyses of DDT and the determination of DDT residues. Because of the possible direct or indirect health hazards from the occurrence of residues on fruits, vegetables, and other crops or food products treated with DDT for insect control, the development of rapid and accurate analytical methods is obviously important.

Three methods are now commonly employed—total-chlorine determination, hydrolyzable-chlorine determination, and the Schechter-Haller colorimetric method. These methods have in common the concentration of the nonvolatile organic chlorine compounds, decomposition of those compounds to water-soluble inorganic chlorides, and estimation of the chlorides by titration. The total-chlorine determination method is fairly rapid, simple, and sensitive, but it is not specific. Any halogen-containing or sulfur-containing compound present in the sample under analysis will, in most cases, interfere and lead to errors in reporting. The presence of chlorine in any form gives higher apparent DDT values. Therefore blanks, i.e., samples in which DDT is not involved, should be analyzed for comparison.

The hydrolyzable-chlorine method was independently developed and described by Gunther,<sup>15</sup> and Neal, *et al.*<sup>5</sup>

Only one of the chlorine atoms in the DDT molecule is measured by this method; hence it is less sensitive than the total-chlorine method and requires larger samples. It has the advantage, however, of being much more specific than that method.

The Schechter and Haller colorimetric method<sup>16</sup> is the most specific and exact quantitative test yet developed. As little as 1 part of DDT in 100 million parts of water has been determined. Unfortunately the method is rather intricate, time-consuming, and exacting, and requires suitable spectrophotometric equipment.

#### DISTRIBUTION METHODS AND EQUIPMENT

*Dusts*—DDT dusts at 5 to 10 per cent strengths in suitable carriers can be applied with reasonable satisfaction with shaker cans, bellows dusters, rotary hand dusters, various types of power dusters, and by airplane. No special developments in dusting devices for applying DDT have been reported. Dust hoppers and distributing equipment employed in applying calcium arsenate and other insecticides can be used satisfactorily for DDT, although DDT dusts are not so effective for most insect-control operations as are sprays.

*Sprays*—Marked progress has been made in the development of devices for distributing liquid insecticides. This was stimulated by the availability of a highly effective insecticide—DDT—and failure of existing hand and knapsack type sprayers satisfactorily to meet the needs of war.

Research workers at the Orlando, Fla., laboratory of the Bureau of Entomology and Plant Quarantine developed a small hand or pocket sprayer<sup>17</sup> designed for dispersing small quantities of finely atomized DDT solutions. This device, somewhat similar to an old-fashioned bicycle pump, contains the concentrated DDT spray<sup>18</sup>

in the inner tube, or plunger. These sprayers can be constructed in various sizes. One about 4 inches in length can be carried in the pocket or in an emergency kit. The formula suggested for use in these small atomizers consists of: DDT (technical) 20 per cent, APS-202 (an aromatic petroleum solvent) 40 per cent, pyrethrum 15 per cent, and kerosene 25 per cent.

Some improvements and adaptations of knapsack type sprayers to DDT insecticides have been made. These include more rugged construction, valves, washers, and hose of oil-resistant materials, and nozzles with rather small openings.

Power sprayers of conventional types have been adapted to use with DDT insecticides mainly by cutting down nozzle apertures. A number of new developments in power spray equipment are under test with DDT materials. These include high-velocity blowers, into which the DDT emulsion or solution is introduced, usually under moderate pressure. Dust mixtures can also be dispersed in the same way, or combinations of sprays and dusts may be used together. Some of these blower devices are mounted on trucks and some on tractors. Wind velocities at the nozzle range from 100 to 150 miles per hour or more. Preliminary experiments indicate that this method of dispersal has distinct possibilities, for use in controlling pests of crops or man at a great saving of time and materials. For example, a tree can be well covered with 1 pint of insecticide where formerly 15 to 20 gallons were required.

One of the main ways of using DDT in the control of insects of medical importance is as a residual spray. For this purpose a rather heavy application of the spray is made to surfaces upon which insects crawl or rest. The solvent or carrier evaporates, leaving the surfaces covered with minute crystals of DDT. Insects that crawl

over these surfaces or otherwise come in contact with them during the next 3 to 12 months are killed. The duration of effectiveness depends upon the type of surface, the insect concerned, the degree of exposure to the elements, the amount of spray applied, and to some extent the spray formula used. The usual quantity of DDT per sq. ft. of surface is 200 mg. This is provided if 1 gallon of a 5 per cent solution or suspension of DDT is applied to 1,000 sq. ft. If a short period of 1 to 3 months' protection is all that is desired, spray may be used.

For applying DDT residual sprays to walls of barns a power sprayer or hand pump may be used. For this purpose water-dispersible DDT is advised. For stores or dwellings a 5 per cent solution in odorless kerosene is preferable, because of the white deposit left by the water-dispersible material.

The material should be applied as a rather coarse spray, not a fog, and the surfaces wet but not to a point where the liquid will run. A nozzle that will give a fan-shaped spray is preferable.

Prior to the advent of DDT relatively little attention was given to devices for applying liquid insecticides from aircraft, because the gallonage required was so great as to make aerial application impractical. The practicability of using aircraft became apparent when the toxicity of DDT to certain insects was found to be so high that 1/10 to 1 pound in  $\frac{1}{2}$  to 1 gallon of liquid per acre would give excellent control. Equipment was soon evolved at the Orlando laboratory of the Bureau of Entomology and Plant Quarantine for dispersing sprays from Cub and Stearman planes.<sup>19</sup> The Army Air Forces Board, the Chemical Warfare Service, the Bureau of Aeronautics, Navy, and the Tennessee Valley Authority collaborated in developing equipment for use on larger and faster planes,<sup>20</sup> and the members of the staff of the University

of Illinois working under a National Defense Research Committee contract coöperated with the Army Air Forces in the development of devices for use on still heavier planes such as the C-47 and the B-25.<sup>21</sup> The Air Forces of the Army and Navy in the Pacific, southwest Pacific, and the China-Burma theaters also devised and put to use several different types of equipment for aerial application of DDT, mainly as an oil solution. Aerial spraying is well summarized in a recent publication issued by the War Department.<sup>22</sup>

In aerial spraying, such factors as droplet size, speed of craft, height of flight, wind direction and velocity, air currents, and density of ground covered, are involved. In general relatively small droplets (25 to 150 microns in diameter) are most effective if evenly applied very close to the ground. In spraying timbered areas low flying is hazardous and often almost impossible. Early morning applications are generally most satisfactory because there is usually less wind, and after ground temperatures begin to rise convection currents are set up which carry much of the fine spray up and thus lose it. For spraying under many conditions therefore somewhat larger particles may be desirable.

The slip stream from fast flying planes breaks up the insecticide into relatively fine droplets through simple nozzle arrangements. With slower flying craft, such as the N3N-3 or White Standard, a spray boom equipped with a series of nozzles extending under the wings so as to discharge the materials largely outside of the slip stream of the propeller was found simple and practical.<sup>19</sup> A pressure of about 80 lbs. per sq. in. developed by a gear or centrifugal pump activated by small wind-driven propellers delivers the liquid at a uniform rate. Various devices for breaking up the liquid into fairly uniform particles have been used. Hus-

man<sup>19</sup> devised the convex breaker bar extending along the row of nozzles about  $\frac{1}{2}$  in. behind them which gives a good break-up.

Experiments with trainer helicopters,<sup>23</sup> carried out by the Bureau of Entomology and Plant Quarantine in coöperation with the Office of the Surgeon General of the U. S. Navy and the U. S. Coast Guard, have shown this type of craft to give satisfactory distribution of DDT solutions and to be adapted to use in small, isolated areas not easily treated with fixed-wing planes.

*Aerosols*—An aerosol is a suspension of fine particles in air or gas, as a fog or mist. They may be produced by pressure of liquefied gas, by heat, or mechanically. Insecticidal aerosols produced by the liquefied gas Freon-12, as developed by Sullivan and Goodhue,<sup>24</sup> have become widely known. The original formula, extensively used by the military, contained pyrethrum and sesame oil. Several formulas containing DDT have been approved by the Bureau of Entomology and Plant Quarantine under the assigned patent. A typical one consists of 2 per cent of a 20 per cent pyrethrum extract, 3 per cent technical DDT, 5 per cent of cyclohexanone, 5 per cent of lubricating oil (SAE 10), and 85 per cent of Freon-12.

Aerosols are of greatest value for use against mosquitoes, flies, and other free-flying insects in enclosed spaces, such as buildings or tents, although they can be used for temporary protection out-of-doors when there is little air movement. Aerosols will also kill many crawling insects, such as cockroaches, bedbugs, and ants, if they come thoroughly in contact with such pests, but it is difficult to bring the aerosol in contact with them when they are hiding in cracks and crevices, and considerable quantities must be used. Therefore, this is not the most satisfactory means of controlling such pests.

About 35 million 1 lb. aerosol bombs were used by the armed forces during the war, and since they became available to civilians in August, 1945, many thousands have been sold.

During the last couple of years much research has been carried on with thermal aerosols. It was soon determined by Latta and coworkers<sup>25</sup> that insecticides dispersed in very small particles—less than 5 microns in diameter—are not effective in killing insects. The generators used in military operations to produce screening smokes, to be effective, must produce smoke particles of these small sizes. LaMer, Hochberg, and associates modified military smoke generators to disperse particles of larger, more or less uniform, and controllable size. Laboratory and practical tests conducted by them and by the staff of the Bureau of Entomology and Plant Quarantine<sup>25</sup> against a number of insect pests of man, trees, and crops showed them to be suitable for producing effective insecticidal aerosols. DDT is especially suitable for use in thermal generators, where high temperatures might break down less stable materials. Various solutions and emulsions containing DDT can be dispersed by this method. Some of the hydrocarbon solvents that carry 25 to 35 per cent of DDT in solution appear to be especially favorable for this purpose. The force with which the aerosol is discharged, however, is not sufficient to carry it any distance. This is one of the chief difficulties in the practical use of thermal generators. Weather conditions, especially the wind, must be right to give desired results. The mist must be drifted with the breeze, but if the wind has a velocity of more than about 5 miles per hour or is changeable in direction, the insecticide does not have time to become fully effective. If there is no breeze, the mist will not penetrate dense woods or jungle areas. Combina-

tions of high-speed blowers with thermal generators showed possibilities of overcoming some of these limitations.

Aerial application of thermal aerosols developed by the engine exhaust has also received considerable attention by various research groups. The exhaust gases are collected and carried back along the fusilage in a stack into which, at a short distance from the exit a ventura is inserted and the DDT solution is sprayed into this under about 80 lbs. pressure. Even though the temperature of these gases is above 1,000° F., the time of exposure is so short that the DDT is not broken down.

#### USE OF DDT IN COMBATING INSECTS OF MEDICAL AND VETERINARY IMPORTANCE

DDT is not effective against all kinds of insects. This is true of all insecticides, and especially of synthetic organic materials. DDT acts both as a contact and stomach poison, but it is particularly effective as a contact killer. A housefly, for example, may be killed if it simply walks across a surface that was lightly sprayed with a DDT preparation even months before.

Just how DDT kills insects has not been determined. The reactions of insects exposed to it would lead one to call it a nerve poison, though it has not been shown to have any destructive action on nerve tissue.

DDT is not rapid in its effects on insects. It does not exhibit the desirable quick stunning effect or knock-down, produced by pyrethrum. In fact most insects are not knocked down in less than  $\frac{1}{2}$  hour and often much more time is required. The initial effect of DDT is to excite the insect. Mosquitoes contacting DDT on the walls of a house become activated and often leave the building. The dusting of a flea-infested dog causes the insects to crawl about actively, and so greatly annoy the dog for several minutes be-

fore they become paralyzed. After an insect shows marked symptoms of poisoning, however, it seldom recovers. On the contrary, many insects recover after being completely knocked out by pyrethrum.

*Mosquitoes*—As is well known, mosquitoes are the sole carriers of malaria, yellow fever, dengue, and filariasis, and they also transmit a number of other maladies, as well as being annoying pests. A highly effective mosquito killer is therefore a weapon of great importance to man. DDT can certainly be called a highly potent culicide. As little as 1 part in 100 million parts of water is fatal to larvae of some species of mosquitoes. The adults, too, are rather susceptible to DDT, since as little as 1 gamma on the body will produce death. It has little effect on the pupae, however, and no effect on the eggs.

The larvae, or wigglers, which are found only in water, are extremely susceptible to DDT applied in an oil solution, an emulsion, or a suspension. Larvae of the malaria mosquitoes are much more easily killed than those of the pest mosquitoes, especially of the genus *Culex*. Prior to the discovery of DDT as an insecticide, phenothiazine was the most effective substance employed against mosquito larvae, and DDT appears to be about 100 times as toxic as phenothiazine to larvae of *Anopheles quadrimaculatus* Say. One-tenth lb. of DDT per acre has been shown by the Orlando laboratory of the Bureau of Entomology and Plant Quarantine to give almost complete destruction of mosquito larvae, when applied either as an emulsion—DDT 20, xylene 60, Triton X-100 (an aralkyl polyether alcohol) 20 per cent, or as a 5 per cent solution in oil.<sup>26, 27</sup>

It is difficult to foresee the extent of use of DDT in larviciding work. Under practical conditions the material frequently does not exhibit such lasting larvicidal effects as was first anticipated.



It is probable that the DDT becomes absorbed on the colloidal soil particles in the pools, thus rendering them inactive. The ready availability of the oils and paris green, with their lesser danger to fish and other beneficial stream and pond life, may cause some directors of mosquito control work to hold back on the general use of DDT as a larvicide, especially if it must be applied by inexperienced crews who are inclined to use too much material.

In cutting down mosquito populations over large areas by killing both adults and larvae, aerial applications of DDT can be very useful. Even under jungle conditions this method of application, at dosages of only 2 to 3 quarts of a 5 per cent solution of DDT per acre, has given almost complete control for 2 to 4 days and considerable reduction for a week.<sup>28</sup> Such use of DDT must be strictly controlled by men thoroughly familiar with the procedures and the dangers attendant upon its improper use.

The efficacy of DDT residual sprays for controlling mosquitoes in buildings was clearly indicated by the work of the Orlando laboratory of the Bureau of Entomology and Plant Quarantine,<sup>29</sup> and its practical value for controlling various mosquito vectors of diseases is being established through extensive operations carried out by military authorities, the U. S. Public Health Service,<sup>30, 31</sup> the Bureau of Entomology and Plant Quarantine, and other agencies. The use of DDT as an aerosol and as a residual spray for the prevention of spread of mosquitoes and other dangerous insects is receiving considerable attention.<sup>32</sup>

There is reason to believe that, through the continuous and general use of residual sprays in buildings, malaria may be controlled in most regions. Since most anopheline mosquitoes alight on the walls or furniture before biting or after feeding, the insecticide, if

present, can get in its deadly action before the insects become infective and transfer the disease to other people.

*Flies*—Since houseflies and blowflies are carriers of many diseases, such as dysentery, typhoid, and anthrax, and also cause various types of myiasis, the addition of DDT to our list of dependable weapons for use against these insects has meant a great deal. Early claims for the long continued lethal action of DDT applied as a spray have been fully substantiated. Deposits of DDT from an oil solution or a suspension applied at the rate of 100 to 200 mg. of DDT per sq. ft. to walls, ceilings, window sills, light fixtures, and other places frequented by flies will continue to kill those insects for 2 to 8 months.<sup>33</sup> The duration of effectiveness depends upon the quantity of DDT applied, the formulations used, the character of the surface treated, and the degree of exposure, especially to the sun. Houseflies and their near relatives are more susceptible to DDT by foot contact than most other insects. But even they are not killed quickly. They are seldom knocked down in less than 15 minutes, and may not fall in less than 3 or 4 hours. If flies are once markedly affected by contact with DDT they ultimately die.

Horse flies and deer flies, which play a part in the transmission of tularemia and anthrax, are rather resistant to DDT, and preliminary tests have shown that they may engorge with blood on a freshly sprayed animal and then fly away. Whether flies so exposed die later has not been fully determined—although some appear not to be adversely affected.

By spraying barns and other out-buildings with DDT, contamination of dairy products by flies and annoyance to the cattle can be greatly reduced. For this purpose 2.5 per cent suspension prepared by diluting a water-dispersible DDT powder is recommended. Emul-

sions or oil solutions containing 5 per cent of DDT can be used but some fire hazard is involved, and there is danger of injuring livestock. As a further aid to the production of clean milk, the DDT suspension can be applied to the cattle to control horn flies. This treatment will protect cattle against horn flies for 2 to 6 weeks. Emulsions of DDT in bay water have been found very effective in controlling the breeding of stableflies in deposits of marine grasses.<sup>34</sup>

Spraying slaughter houses, fish-, meat-, and other food-packing plants and market places with DDT insecticides has been found to reduce greatly fly abundance and consequent food contamination.<sup>35</sup>

*Filter or Moth Flies*—These psychodid flies often breed in sprinkling beds of sewage disposal plants, and become a nuisance in buildings nearby. The simplest method of abating this trouble is to spray the walls surrounding the beds and the interiors and exteriors of adjacent buildings with DDT. In this way a large proportion of the insects may be destroyed as they emerge, and the flooding of the beds or their general treatment with DDT is not necessary.

*Sand Flies and Blackflies*—Experimental applications in several parts of the world have shown DDT solutions to be highly effective in destroying sand flies, both *Phlebotomus*, which carries kala azar, cerruga, and sand-fly fever, and *Culicoides*, which carries filarial worms. DDT residual applications, as for flies and mosquitoes, to interiors of buildings, to window sills and screens, and around foundations and adjacent stone walls will give a high degree of control of *Phlebotomus* and much relief from the vicious *Culicoides*.

Blackflies, or buffalo gnats, are killed by contact with DDT sprays, and the larvae are killed by introducing DDT emulsion into infested streams.<sup>36</sup>

This cannot be done where fish are a factor of importance.

*Fleas*—Fleas yield readily to DDT. These carriers of plague and annoyers of man and animals can be wiped out by spraying the infested rooms, especially the floors, floor coverings, and overstuffed furniture with a 5 per cent solution in odorless kerosene. Especial attention must be given to the sleeping places of pet animals. A 5 to 10 per cent DDT powder applied lightly (10 grams) to the back and neck of a medium-sized dog on the hair next to the skin will kill all fleas present and prevent reinfestation for a week or longer. Cats lick themselves and may swallow enough DDT to sicken or kill them. Oil solutions should not be applied to any animal, because the oil itself may burn the skin and the solutions can be absorbed and may cause poisoning.

Outbuildings, yards, and pigpens can be quickly cleared of fleas by a general spraying with 5 per cent of DDT in kerosene or an emulsion. These sprays are used at the rate of  $\frac{1}{2}$  gallon to 1,000 sq. ft. Water-dispersible powder diluted in water to contain 2.5 per cent of DDT is also satisfactory for this purpose.<sup>37</sup> Fleas which infest rodents, and may serve as carriers of endemic typhus or plague, may be greatly reduced in numbers by dusting the rat burrows and runs with 10 per cent DDT powder. In tests carried out by the Bureau of Entomology and Plant Quarantine workers in Savannah, Ga., dusting of stores with DDT resulted in almost complete elimination of fleas and tropical rat mites from rats in the buildings.

*Bedbugs*—The superiority of DDT over all other treatments for bedbugs has now been amply demonstrated. The use of a 5 per cent DDT solution in deodorized kerosene will largely replace the expensive and dangerous hydro-

cyanic acid gas fumigation and the less effective insecticidal sprays.

The main advantage of DDT over pyrethrum and other sprays is its persistence. DDT sprayed thoroughly on mattresses and bedsteads will continue to kill all bugs coming in contact with it for many months. In tests at the Orlando laboratory of the Bureau of Entomology and Plant Quarantine, infested sleeping quarters were sprayed with a 5 per cent DDT oil solution. The bugs present were exterminated and 25 vigorous bugs were put on the mattress each week for 16 weeks.<sup>38</sup> Not a single living bug was recovered on subsequent examinations, but a large percentage of them were found dead on the floor under the bed.

DDT sprays have been used extensively to combat bedbugs in military barracks. The results have been uniformly and remarkably successful. Tests carried out in coöperation with the National Pest Control Association in about 20 cities have shown 10 per cent DDT dust and 5 per cent kerosene solutions when applied to infested beds and adjacent walls to eliminate the pest.<sup>39</sup>

The spraying of bug-infested theater seats, railway coaches, and pullman cars has given striking and lasting results.

There is reason to believe that DDT residual sprays will be of great value in destroying kissing bugs (*Triatoma*) which transmit chagas disease to man.

*Lice*—The efficacy against body, head, and crab lice of 10 per cent DDT in pyrophyllite, when applied to the body, head, and underclothing, has been fully demonstrated through its extensive use by the military. The protection of troops and civilians from louse infestations has also shown the value of that practice in preventing typhus. It was found at Orlando that powders containing as little as 0.25 per cent of DDT would kill all lice on in-

festated clothing, but the effect was not lasting. The 10 per cent powder will remain effective for about 3 weeks, or long enough to destroy the lice that hatch from the eggs present when the garments are treated.<sup>40</sup>

Impregnation of clothing by dipping in a DDT emulsion or solution and leaving DDT in the garments to the extent of about 2 per cent of their weight has been found to give protection against lice for several weeks. The lousicidal effect persists to a satisfactory degree even after seven or eight washings.

*Ants*—Although ants apparently play little part in the transmission of disease, they are very annoying household pests. DDT-kerosene solutions applied thoroughly to walls, floors, and window sills, and 10 per cent DDT powder applied in and around the ant nests has given somewhat erratic results. Against a number of troublesome species in houses it has given satisfactory control.<sup>39</sup> This is also true of the little fire ant, which is so annoying to fruit pickers in Florida.

*Cockroaches*—These loathsome insects are important contaminators of foods. Heavy residual sprays of DDT either in kerosene as an emulsion or suspension especially directed to the haunts of the roaches are at least as effective as the standard sodium fluoride treatment. Both insecticides kill roaches rather slowly. Some will be found on their backs within 2 or 3 hours, whereas others may not succumb for a week or longer. A heavy residual spray or dust appears to give much protection against reinfestation for weeks.<sup>39</sup> All species of cockroaches are killed, but the German roach, or water bug, is the most resistant.

*Ticks*—Ticks are important carriers of a number of serious diseases of man and animals, such as Rocky Mountain spotted fever, tularemia, and relapsing fever. DDT dusts, emulsions, and

solutions have been found valuable in combating those species upon which it has been tested. Smith and Gouck<sup>41</sup> found that emulsions containing 0.5 per cent of DDT and 2.5 per cent of soluble pine oil, when sprayed over infested wooded areas at the rate of 1 to 3 lbs. of DDT per acre, destroyed a large percentage of various stages of the American dog tick, the lone star tick, and the blacklegged tick. A 10 per cent DDT dust in pyrophyllite applied to grassy areas infested with American dog ticks also gave good results.<sup>42</sup>

The use of 10 per cent DDT powder and emulsions containing about 1 per cent of DDT was found to kill all the winter ticks on horses and to give protection for several weeks.

The treatment of livestock and infested ground areas for tick control must be regarded as still in an experimental stage, but the outlook is very encouraging.

The annoying household and dog pest known as the brown dog tick has been successfully eliminated from premises by a thorough dusting of cracks about baseboards and window casings and a light dusting of the dogs with 10 per cent powder. A 5 per cent kerosene solution of DDT was found equally effective for treating infested premises. Oil solutions should not be applied to animals, as has been stated previously.

**Mites**—In general DDT has not been found very effective against mites. Plant-feeding forms, such as the European red mite and the common red spider, often multiply rapidly following the spraying of trees with DDT insecticides. Parasitic mites on rats are not satisfactorily controlled with DDT as applied for controlling rat fleas. Some tests of DDT against the common chicken mite have given favorable results, whereas others have been adverse.

A formula has been developed by the Bureau of Entomology and Plant

Quarantine which has been found very effective against human scabies and lice,<sup>43</sup> and has been widely used by the armed forces. It consists of benzyl benzoate 68, ethyl *p*-aminobenzoate (benzocaine) 12, sorbitan monooleate polyoxyalkylene ether derivative (*Tween 80*) 14, and DDT 6 per cent (by weight). This material upon dilution at the rate of 1 part to 5 parts of water is applied thoroughly to the entire body.

#### REFERENCES

1. Lillie, R. D., and Smith, M. I. Pathology of Experimental Poisoning in Cats, Rabbits, and Rats with 2,2-bis-parachlorophenyl-1,1,1-trichloroethane. *Pub. Health Rep.*, 59:979, 1944.
2. Nelson, A. A., et al. Histopathological Changes Following Administration of DDT to Several Species of Animals. *Pub. Health Rep.*, 59:1009, 1944.
3. Draize, J. H., et al. Summary of Toxicological Studies of the Insecticide DDT. *Chem. Engin. News*, 22:1503, 1944.
4. Draize, J. H., et al. The Percutaneous Absorption of DDT (2,2-bis(p-chlorophenyl)-1,1,1-trichloroethane) in Laboratory Animals. *J. Pharmacol. & Exper. Therap.*, 82:159, 1944.
5. Neal, P. A., et al. Toxicity and Potential Dangers of Aerosols, Mists, and Dusting Powders Containing DDT. *Pub. Health Rep. Suppl.* 177, 1944.
6. Neal, P. A., et al. Toxicity and Potential Dangers of Aerosols and Residues from Such Aerosols Containing Three Per cent DDT. *Pub. Health Rep. Suppl.* 183, 1945.
7. White, W. C., and Sweeney, T. R. The Metabolism of 2,2-bis(p-chlorophenyl)-1,1,1-trichloroethane (DDT) I. A Metabolite from Rabbit Urine, di-(p-chlorophenyl) Acetic Acid: Its Isolation, Identification and Synthesis. *Pub. Health Rep.*, 60, 3: 66-71, 1945.
8. Orr, L. W., and Mott, L. O. The Effects of DDT Administered Orally to Cows, Horses, and Sheep. *J. Econ. Ent.*, 38, 4:428, 1945.
9. Ofner, R. R., and Calvery, H. O. Determination of DDT and Its Metabolite in Biological Materials by Use of the Schechter-Haller Method. *J. Pharmacol. & Exper. Therap.*, 85:363, 1945.
10. Woodard, Geoffrey, et al. Accumulations of DDT in the Body Fat and Its Appearance in the Milk of Dogs. *Science*, 102, 2642:177-178, 1945.
11. Telford, H. S., and Guthrie, J. E. Transmission of Toxicity of DDT Through the Milk of White Rats and Goats. *Science*, 102, 2660:647, 1945.
12. Cottam, Clarence, and Higgins, Elmer. DDT—Its Effect on Fish and Wildlife. *U. S. Dept. Interior, Fish and Wildlife Cir.* 11, — pp.
13. Roark, R. C. A list of publications on 2,2-bis(parachlorophenyl)-1,1,1-trichloroethane (called DDT) from 1874 to April 30, 1944, inclusive. *U. S. Bur. Ent. & Pl. Quarantine, Processed* 1944, 12 pp.  
A second list of publications on DDT. *U. S. Bur. Ent. & Pl. Quarantine, Processed Cir. E-660*, 1945, 27, pp.
14. Jones, H. A., Fluno, H. J., and McCollough, G. T. Solvents for DDT. *Soap & Sanit. Chem.*, 21, 11:110-113, 115, 155, 1945.

15. Gunther, F. A. Quantitative Estimation of DDT and of DDT Spray or Dust Deposits. *Indust. & Engin. Chem., Analyt. Ed.*, 17:149-150, 1945.
16. Schechter, M. S., et al. Colorimetric Determination of DDT—A Color Test for Related Compounds. *Indust. & Engin. Chem., Analyt. Ed.*, 17:704, 1945.
17. Stage, H. H. The Development of DDT as a Mosquito Control Agent. *New Jersey Extern. Assoc. Proc.* 32 *Ann. Meet.*, 1945, pp. 62-73.
18. Lindquist, A. W., et al. Concentrated Insecticides. *Soap & Sanit. Chem.*, 21, 7:109, 111, 113, 119, 1945.
19. Husman, C. H., Longcoy, O. M., and Hensley, H. S. Equipment for the Dispersal of Insecticides by Means of Aircraft. *U. S. Bur. Ent. & Pl. Quarantine, Processed Cir.* ET 228, 20 pp.
20. Jones, H. A., et al. Dispersion of DDT Sprays from Fast Combat Aircraft. *J. Econ. Ent.*, 38, 6:691-693, 1945.
21. Hall, D. G. Aerial DDT, Emergency Measure for Control of Mosquito-borne Epidemics. *Air Surgeon's Bull.*, 2, 3:71-73, 1945.
22. U. S. War Department. Spraying of DDT from Aircraft. *War Dept. Tech. Bull. TB Med* 200, 1946, 25 pp.
23. Yuill, J. S., Madden, A. H., Lindquist, A. W., and Mackey, J. R. DDT Sprays Applied from a Helicopter Against Adult Mosquitoes. *Proc. California Mosquito Control Assn.*, 1946, 20 pp.
24. Sullivan, W. M., Goodhue, L. D., and Fales, J. H. Insecticide Dispersion, a New Method of Dispersing Pyrethrum and Rotenone in Air. *Soap & Sanit. Chem.*, 16:121, 123, 125, 1940.
25. Latta, Randall. Preliminary Investigations on Heat-generated Aerosols for the Control of Agricultural Pests. *J. Econ. Ent.*, 38, 6:668-670, 1945.
26. Deonier, C. C., et al. DDT as an Anopheline Larvicide: Preliminary Field Studies. *J. Econ. Ent.*, 38, 2:244-249, 1945.
27. Knowles, F. L. DDT Water Emulsion in Rice Fields as a Method of Controlling Larvae of *Anopheles quadrimaculatus* and Other Mosquitoes. *Pub. Health Rep.*, 60:1005-1019, 1945.
28. Lindquist, A. W., and McDuffie, W. C. DDT Oil Sprays Applied from an Airplane to Control *Anopheles* and *Mansonia* Mosquitoes. *J. Econ. Ent.*, 38, 5:545-548, 1945.
29. Gahan, James B., and Lindquist, A. W. DDT Residual Sprays Applied in Buildings to Control *Anopheles quadrimaculatus*. *J. Econ. Ent.*, 38, 2:223-230, 1945.
30. U. S. Public Health Service. DDT Residual Spray Operations. *Unnumbered processed pamphlet*, 1946, 65 pp.
31. U. S. Public Health Service. The Use of DDT in Mosquito Control. *Pub. Health Rep. Suppl.* 186, 1945, 96 pp.
32. Madden, A. H., Lindquist, A. W., and Knipling, E. F. DDT Treatment of Airplanes to Prevent Introduction of Noxious Insects. *J. Econ. Ent.*, 38, 2:252-254, 1945.
33. Lindquist, A. W., et al. DDT as a Residual Type of Treatment for Control of Houseflies. *J. Econ. Ent.*, 38, 2:257-261, 1945.
34. Blakeslee, E. B. DDT Surface Sprays for Control of Stablefly Breeding in Shore Deposits of Marine Grass. *J. Econ. Ent.*, 38:548-552, 1945.
35. Sandholzer, L. A., and Lindquist, A. W. Preliminary Report on the Use of DDT as an Insecticide in the Fishery Industries. *U. S. Dept. Interior Fishery Leaflet*, 146:7 (Oct.), 1945.
36. Fairchild, G. B., and Barreda, E. A. DDT as a Larvicide Against *Simulium*. *J. Econ. Ent.*, 38, 6:694-699, 1945.
37. Stage, H. H. The Use of DDT in Controlling Fleas. *U. S. Bur. Ent. & Pl. Quarantine, Processed Cir.* E-680, 1946, 4 pp.
38. Madden, A. H., Lindquist, A. W., and Knipling, E. F. DDT and Other Insecticides as Residual-type Treatments to Kill Bedbugs. *J. Econ. Ent.*, 38, 2:265-271, 1945.
39. Dove, W. E. Summary of DDT Experiments on Insects that Affect Man and Animals. *U. S. Bur. Ent. & Pl. Quarantine, Processed Cir.* E-673, 1945, 14 pp.
40. Bushland, R. C., et al. DDT Powder for the Control of Lice Attacking Man. *J. Econ. Ent.*, 38, 2:210-217, 1945.
41. Smith, C. N., and Gouck, H. K. DDT to Control Ticks on Vegetation. *J. Econ. Ent.*, 38, 5:553-555, 1945.
42. Bishopp, F. C., Smith, C. N., and Gouck, H. K. Combating the American Dog Tick, Carrier of Rocky Mountain Spotted Fever in the Central and Eastern States. *U. S. Bur. Ent. & Pl. Quarantine Processed Cir.* E-454, Rev. 1946, 5 pp.
43. Eddy, G. W. Scabies and Its Control. *U. S. Bur. Ent. & Pl. Quarantine, Processed Cir.* E-688, 5 pp.

# The National Sanitation Foundation

HENRY F. VAUGHAN, DR.P.H., F.A.P.H.A.

*Dean, School of Public Health, University of Michigan, Ann Arbor, Mich.*

COMMITTEES of the American Public Health Association have on more than one occasion expressed the need for a common understanding of the problems of sanitation that involve industry and public health officers whose obligation it is to enforce regulatory procedures. The National Sanitation Foundation is an outgrowth of an interest engendered from two directions, from the side of the manufacturer and the distributor of products which in their use have a definite health implication, including food, equipment, and food products, and from the side of the public health official. Healthmen inevitably find themselves in a dilemma for want of factual data on which to establish reasonable standards and practices. Industry finds itself befuddled by the kaleidoscopic array of codes and regulations which impose requirements too little understood or unjustified for lack of basic scientific information. The Foundation affords an opportunity to bring together the common interests of the manufacturers and public health officials to approach their respective jobs with the primary consideration of safeguarding the health of the American people.

In December, 1944, there was filed in Michigan a charter for a non-profit Foundation to concern itself with problems of sanitation in their broadest aspect. The purpose of the Foundation is not limited to any one particular phase of sanitation, but includes all those factors which may have an influence upon human well-being and the promotion of health and the elimination

of conditions inimical to health. The articles of incorporation specifically declare as the first obligation "the educational, scientific, and charitable purposes of promoting progress and betterment in environmental sanitation, health, and education of and for mankind." The affairs of the Foundation are conducted by a Board of Trustees who have the authority to establish and conduct activities, including research and education, and to accept gifts for such purposes. There are six trustees, four of whom are professionally engaged in public health work; two are representative of the public.<sup>1</sup> The work of the Foundation is directed by the three officers and two standing committees, one on research, the other on education.<sup>2</sup> At the invitation of the President and Board of Regents of the University of Michigan, headquarters are located at the School of Public Health in Ann Arbor. The program is supported by gifts from industry, and the list of sponsors includes manufacturers of glassware, dishwashing machines, soft drinks, detergents, silverware, and chain drug companies. This list by no means limits the potential support, and new interests are being developed monthly. No sponsor is on the Board of Trustees. However, the latter have authorized an Industrial Advisory Committee<sup>3</sup> which meets at least twice each year.

The Committee on Research has made four commitments to date, and these studies are in varying stages of development. As progress is made in such research projects prompt publica-

tion will be made through the medium of standard journals and committee reports. The first study deals with dishwashing. The committee was impressed by the fact that there had been no basic work done to determine some of the essential factors of sanitary dishwashing, whether it be by a machine or by hand, in the kitchen, in the hotel, or elsewhere. In the case of milk pasteurization we know very definitely what our practice should be, that we heat milk to a certain temperature and hold it for a certain length of time to dispose of any lurking pathogenic organisms which may be accidentally introduced into the milk, or originally in the milk. How long should a food utensil be heated—should it be heated—and at what temperature to assure a safe utensil as far as disease dissemination is concerned? We have codes throughout the nation with temperature requirements varying from a low of 130° to a high of 180° F. or more. There is no place to which the healthmen can turn for basic information on which to establish practice in conformity with sound judgment and on proven experimental bases. A study has been under way for several months at the laboratories of the Michigan State College, under the direction of Dr. W. L. Mallmann, Professor of Bacteriology. Ten dishwashing machines have been installed to determine desirable temperatures and holding periods, other factors remaining constant. As the study proceeds other variables will be introduced. A standard soil has been prepared and engineering and bacteriologic controls have been established. Results will be made known as the study is developed.

A second study deals with methods of measuring end results in utensil sanitization. It is a critical review of the swab-rinse test which has been tentatively adopted by the American Public Health Association. Can com-

parable results be attained in different laboratories? Does a standard of 100 bacteria per specified area per food utensil constitute safe practice? This study, under the direction of W. D. Tiedeman of the Division of Food Sanitation, New York State Department of Health, has been assigned to four widely scattered public health laboratories, in Baltimore, Los Angeles, New York City, and Michigan. Public health officials have long sought a satisfactory method for the bacteriologic examination of eating and drinking utensils to determine whether or not they have been satisfactorily washed and sterilized, disinfected or "sanitized" as regulations may require.

The third study, which is also under the general supervision of Mr. Tiedeman and Dr. William G. Walter, Montana State College, deals with detergents. Methods are available for testing various properties of dishwashing compounds, but there is no test of recognized reliability for determining what operators and health officials want to know most, namely, how effectively a detergent will remove soil from utensils under practical working conditions. The Foundation has inaugurated a project for investigating some of the most promising tests with a view of determining if one of them is satisfactory or can be modified to give dependable and reproducible results.

Hot water at 170° F., or more, remains the most common form of bactericidal treatment of food utensils. Within the last few years there have appeared on the market new groups of synthetic cationic substances, including quarternary ammonium compounds, which are recommended by manufacturers for the sanitization of food utensils. Favorable reports have been received from reliable sources regarding the germicidal efficiency of some of these, showing considerable promise for use in a manner similar to chlorine.

Certain health departments are permitting the use of one or more of these chemicals to a limited extent in an experimental fashion. Many others have been seeking information regarding the various bactericides from sources which may be in a position to undertake basic studies. In view of this need, the National Sanitation Foundation has made available funds for a study of cold sterilization by means of these newer chemical compounds. This study is under the supervision of A. W. Fuchs, U. S. Public Health Service, and Dr. Thomas Francis, Michigan School of Public Health. An important part of the study will be the determination of the toxicity of various compounds with respect to the skin of the dishwasher and the effect on the patron who uses utensils containing residual traces of the bactericidal rinse. Other subjects to be investigated include (1) the development of a suitable field test whereby the sanitarian may determine the concentration of the particular compound in rinses actually used at restaurants and dairies; (2) the development of a suitable non-bactericidal inhibitor for each product for use in swab-rinse test samples, paralleling the use of sodium thiosulfate as a chlorine inhibitor; (3) the stability of each compound in bulk storage and in solutions as used, under different conditions of light and temperature; and (4) the corrosiveness of each product on various metals used in milk and food utensils and equipment. The results of these studies will serve as a valuable guide to health officers in determining which compounds may be approved and in establishing minimum standards for their use as utensil sanitizers.

The Committee on Education has also made four commitments. The confusion in legislative requirements and codes dealing with food control prompted the first project. A measurement of the need of basic knowledge is

indicated by the sample analysis of the opinions of public health officials. There is a wide range of regulations specifying the methods of sanitizing dishes. Variations concern temperatures and time-periods of exposure as well as other matters in the operation of food establishments. A review of the codes warrants the conclusion that they are the results of widely differing opinions. That this situation is obvious to the healthmen is indicated by their own dissatisfaction with the existing condition. One-fourth of those who contributed to the study indicated their intention to change the regulations regarding equipment; nearly one-third are dissatisfied with the rules that specify methods, and almost one-fourth intend to change the regulations that relate to facilities.

Complementary to the study of sanitary codes, the Foundation has approved a grant for an analysis of sanitary practices by health departments. This study will involve the ways and means of applying sanitary codes and, especially important, the various methods used in the education of food handlers.

As a third project, a grant has been approved to initiate a study of public opinion regarding sanitary practices. The study will not be a public poll but rather an analysis of the ways in which the public acquires its information or viewpoints and the manner in which people respond to sanitation or insanitation. As a part of the study an analysis will be made of the various textbooks used in schools, and pamphlet and other material prepared for public consumption. The purpose of the project is to establish a substantial basis for public educational programs by health departments and other agencies.

The final project, under the direction of Lewis Dodson, aims to establish closer relations with the numerous organizations of sanitarians and public



health officials with the view of acquainting these groups with the work of the Foundation and, at the same time, determining the means through which the Foundation may be of maximum service to the public health officials.

Only through understanding contact with the public health agencies, industry, and business, is it possible for the Foundation to direct its efforts toward the solution of the most current and pressing problems of sanitation. Research in sanitation must be as unending as sanitation itself. Each new development points the way to the discovery of newer and better agents and methods. And with each new development the changes in education must be emphasized. In short, the future of

the Foundation is linked with progress and continuing progress in sanitation.

#### NOTES

1. The present membership of the Board of Trustees includes. Dr. Henry F. Vaughan, Dean, School of Public Health, University of Michigan, President; Dr. Nathan Sinai, Professor of Public Health, University of Michigan, Vice-President; Walter F. Snyder, Secretary and Executive Director; H. William Klare, Detroit; Judge Arthur J. Lacy, Detroit; Brig.-Gen. James S. Simmons, Chief, Preventive Medicine, U. S. Army, Washington, D. C.

2. The committee on Research includes: W. D. Tiedeman, New York State Department of Health, Albany; A. W. Fuchs, U. S. Public Health Service, Washington, D. C.; Dr. W. L. Mallmann, Michigan State College, East Lansing.

The Committee on Education includes: Dr. Ira V. Hiscock, Yale University, New Haven; Lewis Dodson, Texas State Department of Health, Austin; Dr. Margaret Mead, American Museum of Natural History, New York.

3. The Industrial Advisory Committee at present includes: H. A. Nordquist, Hobart Manufacturing Co., Troy, Ohio; K. C. White, Owens-Illinois Glass Co., Toledo; George Hanby, Walgreen Drug Co., Chicago; William Hutchinson, International Silver Co., Meriden, Conn.; Harold Sharp, Coca Cola Co., Atlanta, Ga.; E. B. Osborne, Economics Laboratory, Inc.

## Health in Czechoslovakia

As a result of 6 years of German occupation, Czechoslovakia's national health is the gravest of its complicated post-war problems of recovery. With no complete post-war statistics on hand, social insurance data alone indicate an alarming increase of tuberculosis (200 per cent increase for men, 100 per cent for women).

Both the people and their government are fully aware of the situation, which is aggravated by the loss of about 5,000 physicians during the occupation. At the faculty of medicine of Charles University in Prague, the registration of medical students is four times its pre-war size.

Overcrowding, combined with lack of equipment and literature, also hampers the medical faculties. Notes which students take of professors' lec-

tures in overfilled classrooms are their only textbooks. Yet their professors have no source material on the tremendous progress in research and the practical achievements of American medical science in the past 6 years. In print and public meetings, voices are being raised all over the country asking for these important tools, chiefly American medical journals.

Physicians who wish to contribute periodicals need only to ship these periodicals in cartons, collect, to the Masaryk Institute, 8 West 40th Street, New York 18, N. Y., where they are catalogued and packed for overseas shipping. Each volume carries an ex libris with the name of the donor and thus provides a permanent record of the individual's contribution to the rebirth of Czechoslovakian science.

# Frequency of Hemolytic Streptococci in the Throats of Well Children in Dallas

ROBERT M. PIKE, PH.D., AND GLADYS J. FASHENA, M.D.

*Departments of Bacteriology and Immunology, Pediatrics, and Pathology,  
Southwestern Medical College, Dallas, Tex.*

THE general observation that hemolytic streptococcus infections become less prevalent as one approaches the tropics is supported by the available scarlet fever morbidity data for various countries as compiled by Schwentker, Janney, and Gordon.<sup>1</sup> Even within the United States, the incidence of scarlet fever shows an association with latitude.<sup>2</sup> The combined morbidity rate in 1944 for the states of Washington, Wisconsin, and New York was 177 per 100,000 population while that of Louisiana, Alabama, and Florida was 24. The rate for Texas was 58. On the other hand, there is evidence to show that scarlet fever<sup>3, 4</sup> and rheumatic fever<sup>5</sup> mortality is as high in Texas as in some of the northern states.

The carrier rate for group A hemolytic streptococci has been found to be related to the incidence of scarlet fever,<sup>1, 6-8</sup> rheumatic fever,<sup>8, 9</sup> and certain upper respiratory infections.<sup>8, 10, 11</sup> Although marked differences in the geographic distribution of hemolytic streptococci have been found in Army installations,<sup>8</sup> it is not clear how closely the carrier rate is associated with latitude. In view of these facts it appears that knowledge concerning the incidence of hemolytic streptococci, particularly serological group A, in the throats of well children in the southwestern part of the United States would be a useful

addition to the general picture of the distribution of these organisms and their relation to disease.

## METHODS

The subjects chosen for the study were children appearing at the venereal disease and dental clinics of the Freeman Memorial Clinic, Dallas. All were well at the time specimens from the throat were obtained, and particular care was taken to avoid individuals with even minor upper respiratory infections. The group included white, colored, and Mexican children in the proportion of 47, 44, and 9 per cent, respectively. A total of 900 swabbings from 756 children under the age of 15 were examined over a period of 13 months.

All throats were swabbed by one of us. Swabs were applied to the posterior nasopharynx as well as to the tonsillar area, and specimens were cultured within one hour by the methods summarized in Table 1. The details of methods 1 to 6 have previously been described.<sup>12-15</sup> Beef heart infusion agar and broth were used throughout the entire study. All except the first 166 specimens were examined by preliminary incubation of swabs in sodium azide-crystal violet blood broth, followed by plating on beef heart infusion agar containing 5 per cent human blood (method 3), thereby providing a basis for observing any pos-

TABLE 1

Summary of Results Obtained in Culturing 900 Throat Swabbings from Normal Children by Various Methods

Number of Swabbings	Per cent of Cultures Positive for Hemolytic Streptococci by Various Methods *																	
	1		2		3		4		5		6		7		8		Combined	
	Gross	A	Gross	A	Gross	A	Gross	A	Gross	A	Gross	A	Gross	A	Gross	A	Gross	A
166	13.3	4.5	31.9	16.3	..	..	..	..	..	..	..	..	..	..	..	..	33.1	18.1
18	16.7	5.6	38.9	22.2	38.9	22.2	..	..	..	..	..	..	..	..	..	..	38.9	22.2
40	..	..	37.5	17.5	47.5	25.0	..	..	..	..	..	..	..	..	..	..	50.0	25.0
159	..	..	32.1	11.9	39.0	17.0	41.5	16.4	..	..	..	..	..	..	..	..	42.8	17.6
9	..	..	..	..	55.6	55.6	..	..	..	..	..	..	..	..	..	..	55.6	55.6
85	..	..	..	..	45.9	25.9	..	..	45.9	27.1	..	..	..	..	..	..	50.6	30.6
90	..	..	..	..	54.4	31.1	..	..	40.0	24.4	14.4	10.0	..	..	..	..	54.4	31.1
178	..	..	..	..	39.3	25.8	..	..	..	..	..	..	..	..	..	..	39.3	25.8
81	..	..	..	..	42.0	29.6	..	..	..	..	12.3	8.6	19.8	12.3	13.6	8.6	43.2	30.9
74	..	..	..	..	37.8	25.7	..	..	..	..	17.6	13.5	14.9	10.8	..	..	37.8	25.7
Total																		
900	13.6	4.9	32.9	20.1	42.6	25.2	41.5	16.4	41.9	25.7	14.7	10.6	17.4	11.6	13.6	8.6	42.2	24.6

- \* 1. Plated directly on rabbit blood agar  
 2. Plated on rabbit blood agar after incubation in sodium azide-crystal violet broth  
 3. Plated on human blood agar after incubation as in 2  
 4. Plated on human blood streaked-poured plates after incubation as in 2
5. Plated on human blood agar after incubation in potassium tellurite-crystal violet broth  
 6. Suspended in broth and plated directly on human blood agar  
 7. As in 6 but incubated anaerobically  
 8. Plated directly on human blood streaked-poured plates containing sodium azide and crystal violet

sible seasonal variation in the carrier rate.

The last 155 throat swabs were also cultured anaerobically (method 7). Each swab was placed in 2 ml. of sodium azide-crystal violet broth and agitated to suspend the bacteria. Immediately, each of two human blood agar plates was streaked with a large loopful of the suspension. One plate was incubated anaerobically and one aerobically (method 6). The swab was then incubated in the broth for about 24 hours and a third plate streaked (method 3). The results shown in Table 1 are essen-

tially the same for aerobic and anaerobic direct platings.

In method 8, Table 1, the inhibiting substances were added to the plating medium. Although alpha and beta hemolysis by surface growth is not typical on blood agar containing sodium azide,<sup>13</sup> preliminary experiments suggested that deep colonies could be recognized more readily than surface colonies. Therefore streaked-poured plates were prepared as previously described<sup>14</sup> except that agar containing sodium azide 1 in 15,000 and crystal violet 1 in 500,000 was used. Although Gram-

TABLE 2

Increase in Carrier Rates with Repeated Swabbings

Swabbings	Number of Individuals	Carrier Rates Based on All Swabbings	
		Gross Per cent	Group A Per cent
1st	756	47.4	26.3
1st and 2nd	110	61.8	35.5
1st, 2nd, and 3rd	22	72.7	45.5
1st, 2nd, 3rd, and 4th	11	81.8	45.5
1st, 2nd, 3rd, 4th, and 5th	1	100.0	0~

negative organisms and staphylococci were satisfactorily inhibited, fewer hemolytic streptococci were isolated from these plates than from ordinary streaked blood agar plates.

Colonies suspected of being beta hemolytic streptococci were fished to sections of blood agar plates. One colony was fished from each plate unless the appearance suggested more than one kind of hemolytic streptococcus. Those subcultures which were confirmed as hemolytic streptococci were transferred to glucose infusion broth for serologic grouping, using antigens prepared by the formamide extraction method. Both hemolytic and nonhemolytic group D streptococci were found, but only the beta hemolytic strains are recorded in the protocols.

#### RESULTS

The percentage of specimens from which hemolytic streptococci were isolated by all methods combined is shown in the last column of Table 1. The gross carrier rate for the 900 throat specimens was 42.2 per cent and the rate for group A alone was 24.6 per cent. There was very little difference between the rates obtained by combined methods and those obtained by using enrichment broth alone (method 3).

Throats of 110 of the 756 children examined were cultured more than once. Table 2 shows the increase in the proportion of individuals found to harbor hemolytic streptococci as the number of examinations increased. Both the gross and group A rates as obtained by one swabbing were nearly doubled by three additional examinations.

For the purpose of observing any possible seasonal variation in the incidence of hemolytic streptococci, carrier rates were determined for each fifty consecutive swabbings (Table 3). These rates are based on sodium azide-crystal violet enrichment broth cultures all of which were plated on human blood agar

except the first sixteen which were plated on rabbit blood agar. According to previous experience the use of rabbit blood would tend to lower the rate slightly.<sup>14</sup> In Figure 1 the rates are plotted against time and are shown in relation to the number of cases of scarlet fever reported each week in Dallas County. Except for three low group A rates in July and August, the seasonal variation is not marked.\* When the lowest (14 per cent) and the highest (36 per cent) group A rates are compared, however, the difference appears to be significant ( $P=0.01$ ). The abrupt rise in the carrier rates in September following the low points in July and August suggests that the change was not due to any seasonal factor because there was no comparable meteorological change in September. The carrier rates for hemolytic streptococci of groups other than A varied from month to month without any suggestion of a seasonal trend. In contrast to the streptococcus carrier rates, the distribution of reported scarlet fever cases in Dallas County<sup>16</sup> showed a marked increase in January and February, as would be expected. Meteorological data for the 13 months of the study were examined and no correlation was found between carrier rates and precipitation, per cent of possible sunshine or relative humidity. The only possible association between the group A carrier rate and temperature occurred in July and August when the period with the lowest carrier rate corresponded to the months with the highest mean temperature.

The distribution of streptococcus carriers between the sexes was similar (Table 4). This is in contrast to the higher carrier rates found in males than in females by Frisch<sup>17</sup> and by Hartley and others.<sup>18</sup> Bourn, Carpenter, and McComb,<sup>19</sup> however, observed compar-

\* A chi square test on the entire series of observations gives a probability of 0.3 that the observed differences might have occurred by chance.

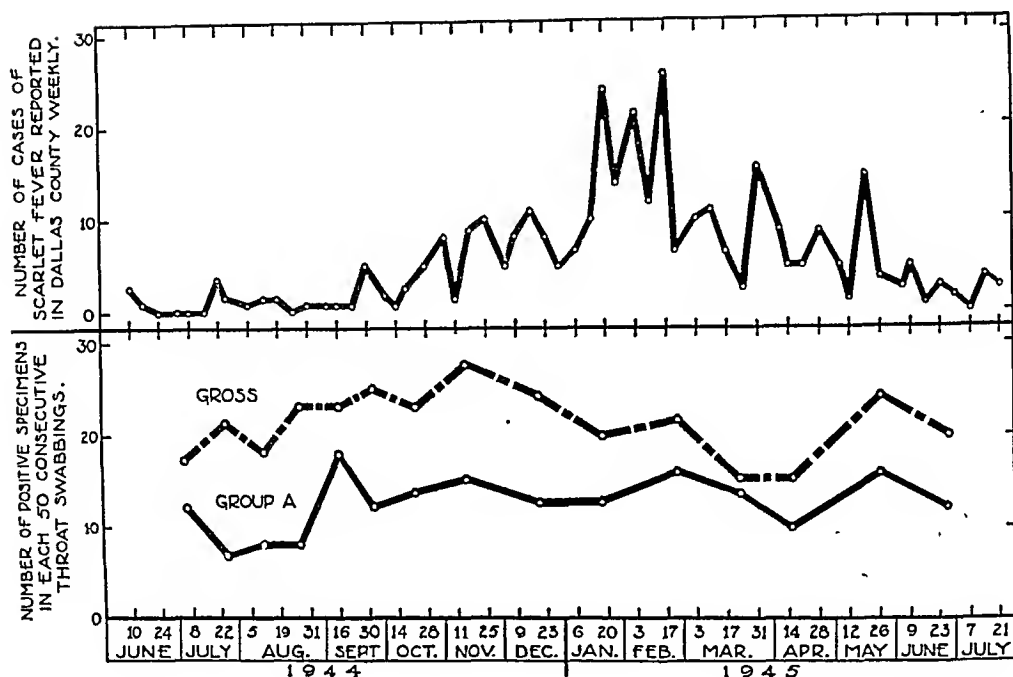


FIGURE 1—Seasonal Incidence of Streptococcus Carriers as Compared with the Seasonal Distribution of Scarlet Fever Reported in Dallas County

able rates in both sexes. The boys and girls in the present study were found to be comparable with respect to age and absence of tonsils, two factors which are shown below to affect the carrier rate. Tonsils had been removed in 24 per cent of the males and in 23 per cent of the females. In the three age groups, 0-4, 5-9, and 10-14, the males num-

bered 58, 234, and 168 and the females, 59, 240 and 141, respectively.

The importance of the presence of tonsils as a factor influencing the streptococcus carrier rate is shown by the high incidence of group A streptococci in excised tonsils<sup>20-23</sup> and by the higher carrier rates observed in individuals with tonsils than in those from whom

TABLE 3

*Hemolytic Streptococcus Carrier Rates for Each 50 Consecutive Throat Swabbings Cultured*

Date 1944	Carrier Rates		
	Gross Per cent	Group A Per cent	Groups B, C, D, F, G Per cent
June 28-July 12	34	24	10
July 13-Aug. 9	42	14	28
Aug. 9-Aug. 17	36	16	20
Aug. 18-Sept. 1	46	16	30
Sept. 4-Sept. 26	46	36	10
Sept. 26-Oct. 9	50	24	26
Oct. 10-Oct. 31	46	28	18
Nov. 1-Nov. 30	58	30	28
Dec. 7-Dec. 29	48	26	22
1945			
Jan. 4-Jan. 31	40	26	14
Feb. 6-Mar. 16	44	34	10
Mar. 20-Mar. 27	32	28	4
Mar. 27-May 8	32	20	12
May 8-June 14	48	34	14
June 18-July 3	36	24	12

TABLE 4  
Carrier Rates According to Sex

Specimens	Male		Female		P
	Number	Per cent	Number	Per cent	
Positive, all groups	196	42.6	183	41.6	>0.5
Positive, group A	125	27.1	99	22.5	0.11
Positive, group C	46	10.0	56	12.7	0.23
Negative	264	57.4	257	58.4	....
Total	460		440		

tonsils had been removed.<sup>17, 22, 24</sup> The results of cultures in children with and without tonsils are shown in Table 5 and Figure 2. Tonsils had been removed from 24 per cent of the subjects. Gross and group A carriers were about twice as frequent in the group with tonsils as in those without. Since the proportion of tonsillectomies increased with age and since carrier rates were also affected by age, an adjustment of these rates for age seemed indicated. The difference between age adjusted carrier rates in children with and without tonsils was even greater than the difference in crude rates because the 0-4 year group which had the highest proportion of tonsils showed the lowest carrier rates. It was surprising to find that removal of tonsils also lowered the carrier rate for group C organisms, a finding which would not be expected from the relatively low incidence of groups other than A reported in excised tonsils.<sup>21-23</sup>

Carrier rates for the three racial

groups are shown in Table 6 and Figure 3. Since tonsils were absent in 29 per cent of white, 17 per cent of the colored, and 33 per cent of the Mexican children, the rates were adjusted for this factor. There was no significant difference in the incidence of group A carriers in the three racial groups. The differences in the frequency of group C

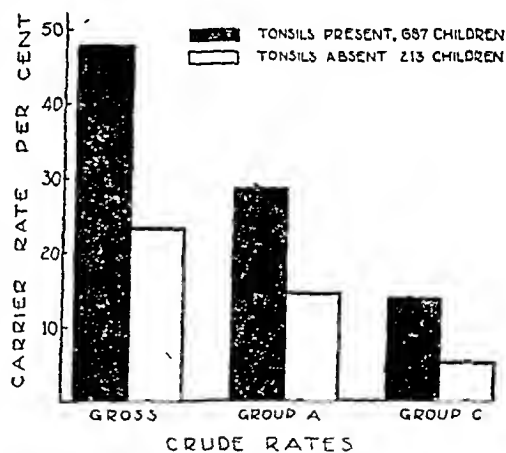


FIGURE 2—Streptococcus Carrier Rates in Children with and without Tonsils

TABLE 5  
Crude and Age Adjusted Carrier Rates in Children With and Without Tonsils

Specimens	Tonsils						P (Crude and Adjusted)
	Number	Present		Number	Absent		
		Crude Rate Per cent	Age Adjusted Rate Per cent		Crude Rate Per cent	Age Adjusted Rate Per cent	
Positive, all groups	329	47.9	48.5	50	23.5	20.9	<0.0001
Positive, group A	194	28.2	28.5	30	14.1	12.1	<0.0001
Positive, group C	91	13.2	13.5	11	5.2	4.6	<0.0001
Negative	358	52.1	51.5	163	76.5	79.1	.....
Total	687			213			

TABLE 6

*Crude Carrier Rates and Carrier Rates Adjusted for Presence or Absence of Tonsils in Different Races*

Specimens	White			Colored			Mexican			P	
	Number	Crude Rate	Rate Adjusted for Tonsils	Number	Crude Rate	Rate Adjusted for Tonsils	Number	Crude Rate	Rate Adjusted for Tonsils	Crude	Adjusted
		Per cent	Per cent		Per cent	Per cent		Per cent	Per cent		
Positive, all groups	167	39.2	40.3	170	43.0	40.8	42	53.2	54.7	0.2	0.2
Positive, group A	110	25.8	26.6	97	24.6	23.6	17	21.5	22.5	0.8	0.7
Positive, group C	29	6.8	7.0	56	14.2	13.0	17	21.5	21.7	<0.01	<0.01
Negative	259	60.8	59.7	225	57.0	59.2	37	46.8	45.3	....	....
Total	426			395			79				

streptococci, however, are not likely to have resulted from chance. These differences are reflected in the gross carrier rates. No explanation is apparent. The three racial groups belonged to families of similar economic status since all qualified for clinic care. The colored and Mexican children represented more or less distinct social groups, each residing in a separate section of the city and attending its own schools.

One of the most important factors affecting the carrier rates is age (Table 7, Figure 4). As has been shown by Schwentker and others,<sup>1</sup> gross and group A rates in preschool children were lower than in the 5-9 and 10-14 year groups.

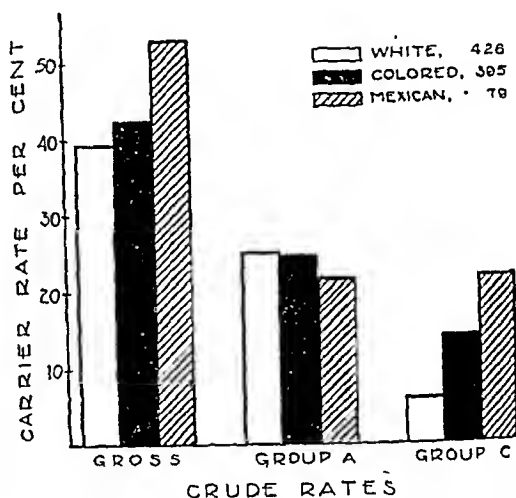


FIGURE 3—Streptococcus Carrier Rates in Different Races

TABLE 7

*Crude Carrier Rates and Carrier Rates Adjusted for Presence or Absence of Tonsils in Different Age Groups*

Specimens	0-4 Years			5-9 Years			10-14 Years			P	
	Number	Crude Rate	Rate Adjusted for Tonsils	Number	Crude Rate	Rate Adjusted for Tonsils	Number	Crude Rate	Rate Adjusted for Tonsils	Crude	Adjusted
		Per cent	Per cent		Per cent	Per cent		Per cent	Per cent		
Positive, all groups	35	29.9	23.8	214	45.1	45.9	130	42.1	37.8	0.1	<0.01
Positive, group A	24	20.5	16.3	132	30.0	35.0	67	21.7	22.2	0.2	<0.01
Positive, group C	8	6.8	5.4	51	10.8	11.7	43	13.9	14.1	0.1	0.05
Negative	82	70.1	76.2	260	54.9	54.1	179	57.9	62.2	...	....
Total	117			474			309				

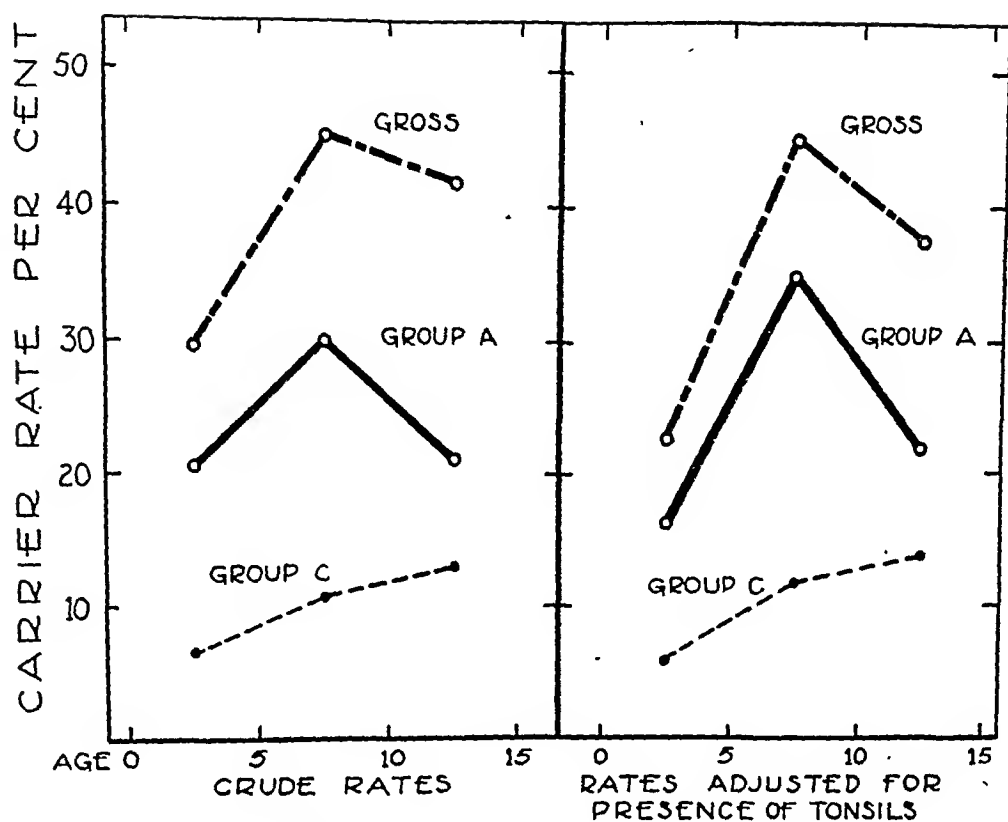


FIGURE 4—Streptococcus Carrier Rates in Different Age Groups

The age group with the highest rates, 5–9 years, corresponds to the group in which streptococcus upper respiratory infections are most often seen and in which first attacks of rheumatic fever are most likely to occur. In contrast to the group A carrier rate, that for group C continued to increase with age. The variation of carrier rates with age is even more apparent when the presence or absence of tonsils is taken into account. Tonsils had been removed from 4, 26, and 27 per cent of the respective age groups.

#### DISCUSSION

Reviewing the hemolytic streptococcus carrier studies which had been done prior to 1939, Hare<sup>25</sup> concluded that the normal group A carrier rate was about 7 per cent. Since that time several studies based on large numbers of examinations have recorded rates two or three times this figure. In Table 8 we

have summarized carrier studies performed in various parts of the world in which serological grouping, at least to the extent of separating the members of group A, was done. A number of reports on closed populations and military groups have been omitted because they did not appear to represent normal situations. The conditions under which the summarized results were carried out included too many variables to permit an analysis with respect to factors which may affect the carrier rate. It is of interest to note, however that the highest group A carrier rate was obtained in Dallas which is nearer the equator than any other locality recorded with the exception of Hong Kong. The latter showed the lowest rate of all. The high gross and group A rates found in Dallas are due to a large extent to the method of making cultures. This is the only study in which enrichment broth was used. Gross and group A rates based



TABLE 8

*Summary of Hemolytic Streptococcus Carrier Studies in Which Serological Grouping Was Reported*

Locality	Latitude	Season	Subjects	Swabbings Examined	Carrier Rate Per cent		Strains Not Group A										Authors
					Gross Group A		B	C	D	E	F	G	H	K			
London	+51		Nurses, school boys, normal adults	750	20	8	5	15	0	0	12	13	25	8	Hare <sup>20</sup>		
Hong Kong	+22	Winter	Chinese of all ages	788	10	4	0	23	0	0	0	27	.	..	Davis and Guzdar <sup>27</sup>		
Edinburgh	+56		Nonrheumatic hospital patients	200	30	13	9	16	1	0	0	6	2	0	Green <sup>9</sup>		
Madison	+43	Autumn	University students	621	16	6	..	..	.	..	..	..	..	.	Frisch <sup>17</sup>		
Tokyo	+35	Autumn	School children, 7-14 years	410	26	10	1	30	0	0	7	28	..	..	Kodama and others <sup>23</sup>		
Melbourne	-37	Spring and Autumn	Hospital personnel	115	22	9	..	..	..	..	..	..	..	..	Bryce and Tewsley <sup>29</sup>		
Tokyo	+35	Winter	School children, 7-9 years	621	23	11	..	..	..	..	..	..	..	..	Kodama and others <sup>20</sup>		
Melbourne	-37		Mainly adults	218	25	6	..	..	.	..	..	..	..	..	Keogh and Kelsey <sup>21</sup>		
Melbourne	-37	Summer and Autumn	Adults and Children	466	18	5	..	..	..	..	..	..	..	..	Keogh and others <sup>21</sup>		
Melbourne	-37		School children 4 to 14 years	210	27	13	..	..	..	..	..	..	..	..	Macdonald and others <sup>22</sup>		
San Francisco	+38	Entire year	Preoperative tonsilectomy patients, 70% children	298	26	16	5	12	0	0	4	6	0	..	Rantz <sup>23</sup>		
Iowa	+42		Children admitted to orthopedic hospital	1,201	17	8	70	18	0	0	0	0	0	0	Jones and others <sup>22</sup>		
Roumania	+45	Entire year	0-14 years	11,625	35	19	..	..	..	..	..	..	..	..	Schwentker and others <sup>1</sup>		
			15 years	7,802	23	14	..	..	..	..	..	..	..	..			
England	+51		Patients and nurses in surgical ward	1,553	43	19	0	11	..	..	..	3	..	..	Williams and Harper <sup>23</sup>		
Dallas	+32	Entire year	Well children, 0-15 years	900	42	25	8	102	12	0	23	27	0	..	This report		

on the 429 throat specimens which were cultured directly on blood agar plates were 14 and 8 per cent respectively. These figures are below the averages of the rates obtained in other studies.

In view of the frequency of group A streptococci in normal throats, the question of the significance of the carrier naturally arises. Haré<sup>25, 34</sup> considered carriers of prime importance as sources of wound infection. Whether or not all carriers are potential sources of such infections is not apparent. Boisvert, Darrow, Powers, and Trask<sup>35</sup> state that the presence of hemolytic streptococci in the nose or throat of a child is usually significant. On the other hand, the diagnostic significance of a positive throat culture is seriously questioned by the report of Dingle and others<sup>36</sup> who found that only half the patients with exudative pharyngitis and positive throat cultures showed a significant rise in antistreptolysin. Assuming that hemolytic streptococcus infections are usually followed by a rise in antistreptolysin,<sup>37</sup> the implication is that nearly half the positive cultures were incidental. The significance of carriers is minimized by Coburn and Pauli<sup>38</sup> who believe that carriers usually do not communicate disease and usually may be considered harmless. Although the serological technique by which the Lancefield groups of streptococci are recognized is valuable in eliminating many strains belonging to groups not frequently associated with disease in man, it is evident that many more group A strains could be designated as harmless, at least from an epidemiological standpoint, if one could determine the factor which has been termed communicability<sup>38, 39</sup> or dispersability.<sup>11</sup>

Our failure to detect any significant variation in the group A carrier rate from September to June was contrary to expectation. Coburn and Pauli<sup>38, 40</sup> stated that the gross hemolytic streptococcus carrier rate in New York City increased during the winter, reaching

a peak in early spring. A similar trend in the group A carrier rate was observed by Rantz in San Francisco.<sup>23</sup> Schwentker, Janney, and Gordón<sup>1</sup> found a definite seasonal trend over a three year period in both gross and group A rates in Roumania with the highest rates occurring in the autumn months. Hodes and others<sup>11</sup> noted a marked seasonal variation in the group A carrier rate among naval recruits. Other studies have failed to reveal a relationship between carrier rates and season. Bourn and others<sup>19</sup> found no seasonal trend in Baltimore. Observations over a period of several years in London by Straker, Hill, and Lovell<sup>41</sup> revealed considerable variability in rates from year to year but no consistent seasonal distribution. They did, however, observe some tendency for the carrier rate to increase as the amount of sunshine increased and the relative humidity decreased. Neither of the last two studies separated the group A streptococci. These and our own results suggest that if seasonal factors affect the carrier rate, the association may be obscured by other influences.

Several investigators have demonstrated an association between the group A streptococcus carrier rate and the incidence of streptococcal disease. Schwentker, Janney, and Gordon<sup>1</sup> and Schwentker<sup>6, 7</sup> have shown very definite increases in carrier rates, particularly of the epidemic type, during outbreaks of scarlet fever. The same authors<sup>1</sup> also found that the seasonal variations in the normal carrier rate in communities free from scarlet fever were closely parallel with the incidence of scarlet fever in neighboring counties. Van Ravenswaay<sup>8</sup> found a tendency for streptococcal disease to occur with greater frequency at Army Air Forces installations with high carrier rates than in those with low rates. It is evident, however, that an increase in the incidence of carriers is not necessarily followed

by an increase in disease, even, in closed populations, since Hartley and others<sup>18</sup> observed a rate of 88 per cent among boys in a home for crippled children without any cases of infection.

In Dallas County (Figure 1) the reported incidence of scarlet fever showed a gradual increase during the autumn, reached a peak in January and February, and declined during the spring. Neither the gross nor group A streptococcus carrier rates showed such a pattern. The only similarity between the seasonal incidence of scarlet fever and the frequency of carriers lies in the fact that low points were observed for both during July and August. It would appear that the sample of the Dallas County population which we examined should have been sufficient to reveal an association between scarlet fever and carrier rate had there actually been one. In spite of the close relationship between carrier rate and incidence of disease observed in some instances, our results together with those of others indicate that an increase in streptococcal disease is not necessarily accompanied by an increase in normal carriers and that a high carrier rate does not necessarily mean a high incidence of disease.

The effect of tonsil removal on the group A streptococcus carrier rate as shown by our results, although significant, is less marked than that observed by others. MacDonald, Simmons, and Keogh<sup>22</sup> found group A streptococci six times as frequently in children with tonsils as in those without. In college students examined by Frisch<sup>17</sup> there was a threefold difference. Wheeler and Jones<sup>24</sup> found that tonsils were associated with the carrier state and also with streptococcal disease in naval personnel, although they imply that a similar correlation has not been observed in childhood age groups. In the first two of these studies tonsillectomy produced very little effect on the carrier rates for groups other than A. The fact that our

group C carrier rate was also significantly lowered by tonsillectomy suggests that the tonsils serve as reservoirs of these organisms as well as for the group A streptococci. Kuttner and Krumwiede,<sup>10</sup> on the other hand, found that the length of the carrier state was not related to the presence or absence of tonsils. The finding of lower carrier rates in tonsillectomized individuals is not in itself an argument for indiscriminate tonsillectomy. Any reduction in the number of carriers is presumably desirable,<sup>22</sup> but evidence that the carrier state is detrimental to the individual is lacking. Wendkos,<sup>42</sup> for example, concluded that tonsillectomy in childhood was not a deterrent to subsequent rheumatic fever.

In two respects the group C streptococcus carrier rates differed from the group A. First, there were racial differences in the incidence of group C organisms. Some factor, not apparent, which was responsible for these differences failed to influence the group A rates. Second, the distribution of the two groups of streptococci with respect to age was not the same. It would be necessary to make observations on several older age groups to complete the picture, but whatever causes the decrease in the group A carrier rate beyond the age of 10 is either delayed or non-effective in reducing the dissemination of the group C streptococci.

Our failure to isolate significantly more hemolytic streptococci on plates incubated anaerobically as compared with those incubated aerobically is contrary to the experience of Jones, Holmes, and Hale.<sup>32</sup> We did notice a marked inhibition of the large colony forms of Gram-positive and Gram-negative cocci on the anaerobic plates which may in part account for any advantage that may be found for anaerobic plates. Also, the increased hemolytic activity which many group A streptococci show under anaerobic conditions<sup>43, 44</sup> might be ex-

pected to lead to their more frequent recognition under these conditions.

#### SUMMARY

Throat specimens from 756 children over a period of 13 months were examined for beta hemolytic streptococci by the use of sodium azide-crystal violet enrichment broth. Serologically identified streptococci were isolated from 42 per cent of the 900 specimens; group A streptococci from 25 per cent. Direct platings of the 429 throat swabs showed hemolytic streptococci of all groups in 14 per cent and group A in 8 per cent. Anaerobic incubation of direct platings from 155 specimens did not significantly increase the number of positive cultures. The use of streaked-poured plates containing sodium azide and crystal violet in culturing 81 throat swabs showed no advantage over surface-streaked plates without the inhibitors.

Repeated swabbings markedly increased the proportions of individuals found to be carriers of beta hemolytic streptococci. The gross and group A carrier rates for each fifty consecutive swabbings varied between 32 and 58 per cent and 14 and 36 per cent respectively. No association between carrier rates and season or between carrier rates and incidence of scarlet fever was found except that the lowest group A rates occurred during the warmest months when scarlet fever incidence was low.

Gross and group A carrier rates were similar for both sexes and for white, colored, and Mexican children. A significant racial difference was found, however, in the incidence of group C streptococci. More than twice as many carriers of group A and group C organisms were found among children with tonsils as among those without tonsils. Gross and group A carrier rates increased with age up to 10 years and then declined, but the group C rate continued to increase.

The results are discussed in relation

to hemolytic streptococcus carrier studies in other parts of the world.

#### REFERENCES

1. Schwentker, F. F., Janney, J. H., and Gordon, J. E. The Epidemiology of Scarlet Fever. *Am. J. Hyg.*, 38:27, 1943.
2. Anon. Notifiable Diseases, Year 1944. *Pub. Health Rep.*, 60:334, 1945.
3. Stebbins, E. L. Scarlet Fever and Related Streptococcal Infections. *Med. Clin. N. A.*, 27:661, 1943.
4. *Vital Statistics of the United States*, 1942, part 2, p. 16.
5. Fashena, G. J. The Incidence of Rheumatic Fever in Texas with Particular Reference to the Dallas Area. *Texas State J. Med.*, 39:474, 1944.
6. Schwentker, F. F. Relation between Scarlet Fever Morbidity and Streptococcus Carrier Rates. *Am. J. Hyg.*, 38:207, 1943.
7. Schwentker, F. F. Survey of Hemolytic Streptococci in Certain Army Camps. *Army Med. Bul.*, 65:94, 1943.
8. Van Ravenswaay, A. C. The Geographic Distribution of Hemolytic Streptococci. Relationship to the Incidence of Rheumatic Fever. *J.A.M.A.*, 126:486, 1944.
9. Green, C. A. Serological Examination of Hemolytic Streptococci from Acute Rheumatic and Control Groups. *Brit. M. J.*, 1:1147, 1938.
10. Kuttner, A. G., and Krumwiede, E. Observations on the Epidemiology of Streptococcal Pharyngitis and the Relation of Streptococcal Carriers to the Occurrence of Outbreaks. *J. Clin. Investigation*, 23:139, 1944.
11. Hodes, H. L., Schwentker, F. F., Chenworth, B. M., and Peck, J. L. Scarlet Fever as an Airborne Infection. *Am. J. M. Sc.*, 209:64, 1945.
12. Pike, R. M. An Enrichment Broth for Isolating Hemolytic Streptococci from Throat Swabs. *Proc. Soc. Exper. Biol. & Med.*, 57:186, 1944.
13. Pike, R. M. The Isolation of Hemolytic Streptococci from Throat Swabs. Experiments with Sodium Azide and Crystal Violet in Enrichment Broth. *Am. J. Hyg.*, 41:211, 1945.
14. Pike, R. M. The Isolation of Hemolytic Streptococci from Throat Swabs. II. The Efficiency of Human and Rabbit Blood in Streaked and Streaked-poured Plates. *J. Lab. & Clin. Med.*, 30:518, 1945.
15. Pike, R. M. The Isolation of Hemolytic Streptococci from Throat Swabs. III. Value of Enrichment Broth Containing Potassium Tellurite and Crystal Violet. *J. Bact.*, 50:297, 1945.
16. *Texas Morbidity This Week*, Texas State Dept. of Health, 1944-1945.
17. Frisch, A. W. Hemolytic Streptococci from the Throat of Normal Young Adults. *J. Infect. Dis.*, 62:40, 1938.
18. Hartley, G., Jr., Enders, J. F., Mueller, J. H., and Schoenback, E. B. Absence of Clinical Disease in Spite of a High Incidence of Carriers of Group A Hemolytic Streptococci of a Single Type; Failure of Tyrothricin to Influence the Carrier Rate. *J. Clin. Investigation*, 24:92, 1945.
19. Bourn, J. M., Carpenter, H. M., and McComb, E. Streptococcus Haemolyticus (beta) in the Presence and Absence of Acute Minor Respiratory Infection, 1928-1931. *Am. J. Hyg.*, 17:761, 1933.
20. Elliott, S. D. Bacteraemia Following Tonsillectomy. *Lancet*, 237:589, 1939.
21. Keogh, E. V., MacDonald, I., Battle, G., Simmons, R. T., and Williams, S. The Serological Groups and Types of Streptococci Isolated from Excised Tonsils. *Brit. M. J.*, 2:1036, 1939.
22. MacDonald, I., Simmons, R. T., and Keogh,

E. V. Further Observations on the Incidence of Haemolytic Streptococci in the Tonsils. *Med. J. Australia*, 1:849, 1940.

23. Rantz, L. A. The Hemolytic Streptococci. Studies on the Carrier State in the San Francisco Area with a Note on the Methods of Isolation and Serological Classification of these Organisms. *J. Infect. Dis.*, 69:248, 1941.

24. Wheeler, S. M., and Jones, T. D. Factors in the Control of the Spread of Acute Respiratory Infections with Reference to Streptococcal Illness and Acute Rheumatic Fever. *Am. J. M. Sc.*, 209:58, 1945.

25. Hare, R. Sources of Haemolytic Streptococci. *Lancet*, 1:109, 1940.

26. Hare, R. The Classification of Haemolytic Streptococci from the Nose and Throat of Normal Human Beings By Means of Precipitin and Biochemical Tests. *J. Path. & Bact.*, 41:499, 1935.

27. Davis, L. J., and Guzdar, J. S. The Serological, Toxigenic and Biochemical Reactions of Haemolytic Streptococci from the Throats of Hong Kong Chinese. *J. Path. & Bact.*, 43:197, 1936.

28. Kodama, T., Ozaki, M., Nishiyama, S., and Chiku, Y. The Serological Grouping and Typing of the Hemolytic Streptococci Isolated in Tokyo. II. *Kitasato Arch. Exper. Med.*, 15:162, 1938.

29. Bryce, L. M., Tewsley, P. Bacteriological and Clinical Study of Professional Personnel of Maternity Hospitals with Special Reference to Carriers of Haemolytic Streptococci. *Med. J. Australia*, 1:639, 1938.

30. Kodama, T., Ozaki, M., Nishiyama, S., Igarasi, J., Tiku, Y., and Kawamura, H. The Serological Grouping and Typing of Hemolytic Streptococci Isolated in Tokyo. III. *Kitasato Arch. Exper. Med.*, 16:110, 1939.

31. Keogh, E. V., and Kelsey, H. Observations on the Epidemiology of Streptococcal Infections. *Med. J. Australia*, 1:100, 1939.

32. Jones, M., Holmes, L. F., and Hale, W. M. Relative Efficiency of Aerobic and Anaerobic Methods in the Isolation of Beta-hemolytic Streptococci. *J. Bact.*, 42:138, 1941.

33. Williams, R. E. O., and Harper, G. J. The Frequency of Haemolytic Streptococci of Different Groups in the Normal Nose and Throat. *Manth. Bull. Emerg. Pub. Health Lab.*, 3:86, 1944.

34. Hare, R. Haemolytic-Streptococci in Normal People and Carriers. *Lancet*, 240:85, 1941.

35. Boisvert, P. L., Darrow, D. C., Powers, G. F., and Trask, J. D. Streptococcosis in Children. A Nosographic and Statistical Study. *Am. J. Dis. Child.*, 64:516, 1942.

36. Dingle, J. H., Abernathy, T. J., Badger, G. F., Beard, J. W., Cressy, M. L., Feller, A. E., Langmuir, A. D., Rammelkamp, C. H., and Strauss, E. Endemic Exudative Pharyngitis and Tonsillitis. Etiology and Clinical Characteristics. *J.A.M.A.*, 125:1163, 1944.

37. Mote, J. R., and Jones, T. D. Studies of Hemolytic Streptococcal Antibodies in Control Groups, Rheumatic Fever, and Rheumatoid Arthritis. II. The Frequency of Antistreptolysin "O", Antifibrinolysin, and Precipitating Antibody Responses in Scarlet Fever, Hemolytic Streptococcal Infections, and Rheumatic Fever. *J. Immunol.*, 41:61, 1941.

38. Coburn, A. F., and Pauli, R. H. The Interaction of Host and Bacterium in the Development of Communicability by *Streptococcus Haemolyticus*. *J. Exper. Med.*, 73:551, 1941.

39. Coburn, A. F. The Carrier Problem in the Dissemination of Hemolytic Streptococcus. *U. S. Nav. M. Bull.*, 42:325, 1944.

40. Coburn, A. F., and Pauli, R. H. Studies on the Relationship of Streptococcus Hemolyticus to the Rheumatic Process. I. Observations on the Ecology of Hemolytic Streptococcus in Relation to the Epidemiology of Rheumatic Fever. *J. Exper. Med.*, 56:609, 1932.

41. Straker, E., Hill, A. B., and Lovell, R. A Study of Nasopharyngeal Bacterial Flora of Different groups of persons Observed in London and South-east England During the Years 1930-1937. *Reports on Public Health and Medical Subjects*, No. 90.

42. Wendkos, M., Rheumatic Fever in the Army from the Pediatricians Point of View. *Am. J. Dis. Child.*, 68:222, 1944.

43. Fry, R. M. Anaerobic Methods for the Identification of Haemolytic Streptococci. *J. Path. & Bact.*, 37:337, 1933.

44. Fuller, A. T., and Maxted, W. R. The Production of Haemolysin and Peroxide by Haemolytic Streptococci in Relation to the Non-Haemolytic Variants of Group A. *J. Path. & Bact.*, 49:83, 1939.

# Value of Community Health Centers in Preventive and Curative Medicine\*

HUNTINGTON WILLIAMS, M.D., F.A.P.H.A.

*Commissioner of Health of Baltimore, Md.*

FROM the days at least of the Greek Temples of Healing and Health in ancient Epidaurus and Cos down to the present time mankind has never questioned the value of having medical centers for the care of bodies and minds. Even in the earliest times, these temples were devoted not only to the healing of the sick but also to the teaching of personal hygiene.

Through the darker ages medical care withdrew itself to some extent into the hospitals and monasteries, but with the more recent flowering of modern preventive medicine we come down to the present-day and to a meeting such as this in Pittsburgh where the value of the modern health center is a topic for discussion in the larger matter of the health needs of Allegheny County as a whole. The long historic shadow back of today's meeting cannot but show that the health center is something of great importance both in the field of preventive and curative medicine.

Whether the problem is the administration of a state health department or that of a big or small city, the viewpoint of our time calls for decentralization. Public health services both preventive and curative must be brought to the several neighborhoods in order to make possible a speedy and efficient service for the people. It is really just

as hard for a city health department to function properly out of a single central office building as it would be to ask the city fire department or the city police department to do without its district station houses and serve the public from one central building, or to ask the city board of school commissioners to teach all the children in a city in one single school house.

Hospitals are in effect community health centers, although they are usually thought of in terms of treatment of the sick rather than as preventive centers. While their bed patients may come from all sections of a given city, the outpatient or dispensary services, for the most part, are for those who live within a fairly close walking distance from the hospital.

When it comes to the more preventive type of health center, we find a great variety among the counties and cities in this country; some with almost no curative medical functions, some largely administrative branch offices of a central health department; and others with a variety of clinics chiefly preventive in nature, like prenatal clinics, well baby clinics, toxoid and vaccination clinics, or chest x-ray clinics; but some with treatment facilities, especially in the field of venereal disease control where the treatment of one patient is considered a preventive service aimed to check the spread of the disease to other persons.

Where the people of a community

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have been carefully and consistently taught the important lessons of how to keep well they appreciate the common-sense philosophy that it is easier and cheaper and much more comfortable to stay well than to get well after they have become ill. They can be instructed by the suitable dissemination of health information through the medical profession itself, and through a multitude of official and nonofficial health agencies, to look to their family physician, if they can afford one, for guidance in keeping well. If they cannot afford this from the private physician, they have a right to expect it from the local health department, and it is at the community health center that they should seek such guidance and service.

Imagination and some courage are required to cut through the traditions of the past in any given community and to establish the foundation for a satisfactory program of district or neighborhood health administration, the central units of which will be the community health centers. After the first two or three of these health district centers have been established in a given community, or county health units as district administrative elements in a state health program, it is amazing to the thoughtful watcher to note the rapid increase in volume of health service that is rendered to the people in the neighborhood or district.

In this connection I have in mind a large five-story converted orphan-home building that was established in our city as a health center late in 1939. The public took a great interest in this new City Health Department field station, and the day of its opening is the only known occasion when a strong and supporting public health editorial ever appeared in both the morning and evening editions of the local newspapers on a single day. The district health officer had spent a year in study at the

Harvard School of Public Health and had received his postgraduate degree there. The district health center building with its corps of 15 public health nurses rapidly became the center for innumerable radiating health services in the schools and the homes and a nearby hospital and a multitude of other related organizations and agencies.

In the building itself there were gradually established 25 weekly Health Department clinic sessions which included 11 for adult cases of venereal diseases, four for prenatal care, three for congenital syphilis, five for chest x-ray examinations, and two for well babies. These carry on from 10 A.M. to 10 P.M. practically every weekday. They are scheduled at hours to suit the needs of housewives, babies, and working men and women. From the beginning there were about 3,000 clinic visits per month at the health center and these increased during the next five years until there were more than 7,000 clinic visits a month at this health center building.

Professional organizations that made use of the building for their meetings included the Monumental City Medical Society with monthly meetings, the Maryland Dental Society, the National Association of Colored Graduate Nurses, the Maryland League for Nursing Education, the Negro Health Week Committee, the Baltimore League for the Hard of Hearing, with lip-reading classes; the State Mental Hygiene Society, with weekly clinics, the Instructive Visiting Nurse Association and the Obstetrical Staff of the nearby Provident Hospital.

In addition numerous non-professional groups have also made themselves at home at the health center building, including the Women's Co-operative Civic League, the Parents' Educational Group, the Women's Auxiliary of the Monumental City Medical Society, the Women's Civic League, Boy

Scouts, Girl Scouts, Clean Block Campaigners, Social Workers Round Table, and various church groups.

Furthermore, the teaching functions of the health center are abundant. Student groups that have met there regularly or from time to time include medical students from the University of Maryland, postgraduate students from The Johns Hopkins School of Hygiene and Public Health, student nurses from the Maryland General Hospital, the West Baltimore General Hospital and the Provident Hospital, and students from Bucknell College, Morgan State College, Douglass High School, Dunbar High School, and many elementary schools. Indeed, public health workers have visited the health center from many foreign countries as well as from practically every state in this country. About 50,000 public health pamphlets have been distributed from the health center and approximately 75,000 specimen containers have been supplied to physicians and hospitals in the health center area; and in addition about 25,000 doses of toxoid for diphtheria prevention and 20,000 vaccine virus points have been supplied from the health center since it was opened in 1939.

A foundation unit in any new community health center is a carefully prepared and friendly relationship with the members of the medical profession who practise in the area, in and out of the homes of the people within the given neighborhood. Success, as the years go by, is likely to depend on the availability of a full-time medical health officer to preside over the destinies of the health center or health district, which perhaps can best serve a population of 100,000; possibly more. Early meetings that he might arrange with the physicians of the area will pay big dividends in teamwork as the years progress. It is not uncommon to find the local or neighborhood medical

group or society holding monthly meetings in the health center building. This indeed is an ideal situation and I can assure you does not happen accidentally. The health center may indeed be a valuable service station for the physicians of all types who practise medicine in the neighborhood. Its icebox should be well stocked with vaccine virus, toxoid, typhoid vaccine and other biologics, and the shelves in its cupboard or its display racks should be crowded with supplies of birth and death certificates and communicable disease report cards or up-to-date and helpful leaflet publications on the common communicable diseases, and on keep-well topics such as nutrition, breast feeding, cancer, and maternal and child hygiene that are available for wide distribution and teaching. There should be a receiving station where physicians may deposit throat cultures, sputum samples, blood specimens, or other similar items for transportation once or twice a day to the central laboratory of the local health department. The district health officer would be available for consultation service in the diagnosis of obscure cases that might be communicable disease, on the call of any member of the medical profession, and a speedy and efficient neighborhood service would thus be made available for the diagnosis, treatment, and prevention of sickness in a way that perhaps can be best described as "putting out the fire before the house burns down."

It is possible that such a health center might be just across the street from a large general hospital and in very close and mutually helpful relationship to it, or it might be more remote and in effect a feeding station to the nearest hospital some blocks or miles away. The teamwork between a health center and a nearby medical school hospital unit can be very impressive indeed. It is important for the health center to



remember its primary administrative and service functions as a branch office of the city health department so that the public receives prompt and efficient service without the health center's being overloaded with teaching and research responsibilities. It is nevertheless possible for a health center strategically located to serve a medical school or a school of hygiene as an invaluable field training unit. Indeed such a unit is almost as indispensable in the teaching of medicine and public health as the hospital ward is imperative for the proper teaching of medical students.

Not only do medical students learn to circulate through the district health center and into the neighborhood homes for the study of the social aspects of community health and welfare, but also students in nursing training schools may do likewise. Physicians taking elementary or advanced university courses in public health may be given opportunities in the district health center to observe and participate in health department activities. In one large university teaching hospital center there are across the street from the district health center the university school of pharmacy and the university dental school that share with the medical and nursing groups because of their close proximity, so that teaching and research opportunities are available to an unusual degree.

The district health center in such close relations with a university school of public health may also serve in providing invaluable research material for postgraduate study, both in the field of administrative public health procedure and in more restricted statistical or epidemiological subjects. In the former, experiments can be conducted in how to improve the school health program of the community, or how to reorganize the public health nursing schedules in generalized or specialized services. The results of such study efforts may prove

unsatisfactory and the proposals can then be discarded, or with modifications the entire city program in a given field of health administration may be modernized and improved as a result of experimentation on a small district basis.

In the field of epidemiology special research studies may be continued over a number of years in the matter of determining sickness rates of the general population by home visits and careful statistical scrutiny; or control procedures for communicable diseases, such as measles, whooping cough, or tuberculosis, or especially the venereal diseases may be studied. There is a mass of misinformation in regard to the statistics relating to the venereal diseases in this country and a great need for refinement of epidemiological and statistical studies in this field. From researches in a district health center in relation to neighboring hospitals and clinics there has come much new light on the complex matter of reported case rates for the venereal diseases, in contrast with more refined rates such as prevalence rates, incidence rates, and discovery rates for such diseases as syphilis.

Just as a district health center building and staff might be considered the branch office of the central city health department in a large community, so the county health center is the branch office in rural areas for the state health department. The services, both preventive and curative, that are to be expected of such an urban or rural community health center are almost identical, although, more likely than not, the health center will for the present serve as a channel to hospitals or other institutions or agencies for the curative part of the total public health picture.

The interrelationships between the official and nonofficial agencies in public health work constitute a matter of real moment, and depend upon the

traditions and inheritances of the individual community or neighborhood. One county health officer whom I know has been very successful in stimulating club or association groups in scattered spots in his county to establish small health center buildings for clinics and other services and for their support and maintenance on a volunteer basis, under the general guidance of the public health nurses of his county health department. Success in this type of work takes a county health officer of broad vision and real willingness to give and take in the matter of his official responsibilities. Underlying all developments of this kind and in part responsible for their success or failure is the basic state public health law and the various related local laws and regulations governing public health administration in the areas served by the community health center.

There is literally a library of valuable information on this matter of district or community health centers in this country and also in England. One of the most valuable publications on the matter is the booklet *District Health Administration—A Study of Organization and Planning*, published in 1936 by Ira V. Hiscock, Professor of Public Health at Yale University. In this you will find a summary of the information on the matter of district health centers from the days of the early settlement work in England in 1884 to the time the pamphlet was issued. And in it is mention of The Irene Kaufman Settlement Health Center in Pittsburgh as well as the Kirby Memorial Health Center in Wilkes-Barre. The early health district and health center work in New York City, beginning in 1914, is brought down to date, with illustrations and floor plans of some of the great quarter-million dollar health center buildings in New York City, as well as of some of the White Founda-

tion Health Units established in Boston.

Dr. C.-E. A. Winslow has published three companion volumes on the health demonstrations in New York State, the last of which has the title *Health Under the "El."* This is a ten year record of neighborhood health promotion in a crowded portion of New York City.

In relation to community or neighborhood health, the New York City Department of Health has likewise made available a series of publications on the *Development of District Health Centers in New York City* that go into the greatest detail in connection with the statistics and financing and organization of the work in that city.

Perhaps an equally interesting and epochal publication comes from the Ministry of Health of England in the *Interim Report on the Future Provision of Medical and Allied Services* (Cmd. 693) submitted in May, 1920, by a Consultative Council under the chairmanship of Lord Dawson of Penn. This brief document aims to suggest a scheme for the systematic provision of medical and allied services for the inhabitants of a given area. Both prevention and cure are considered, and the service units include teaching hospitals with medical schools, other existing hospitals, secondary health centers, and three types of primary health centers. After a breathing period of somewhat less than twenty-four years, we find a further Ministry of Health White Paper, *A National Health Service*, as presented to Parliament in 1944 (Cmd. 6502). Here there is further development of a unified medical care program, both preventive and curative, with the health center in the key position, as forecast for the future.

A last reference to recent experiences in Great Britain may be mentioned in the striking volume *The Peckham Experiment*, which describes the work of an ambitious pioneer health center on

the pattern of a family club that was established in a southern section of London in 1926, one which had to be suspended at the outbreak of the war in September, 1939.

How valuable the recommendations and experiments in England will prove for the developing public health and medical care movement in the United States will remain for some time a mystery. However, it may safely be said that there will be an evolving pattern in the matter of distribution of preventive and curative medical services to the people of our country, and in this pattern the community or district health center will play an increasingly important part.

#### BIBLIOGRAPHY

1. Hiscock, Ira V. *District Health Administration: A Study of Organization and Planning*. New York: Milbank Memorial Fund. 115 pp.
2. *The Health Units of Boston Established from Income of George Robert White Fund*. 1924-1933. Printing Dept., City of Boston, 1933. 69 pp.
3. Winslow, C.-E. A., and Zimand, S. *Health Under the El: The Story of Bellevue-Yorkville Health Demonstration in Mid-town New York*. New York: Milbank Memorial Fund. 203 pp.
4. Wilinsky, C. F., M.D. The Health Center. *A.J.P.H.*, 17, 7:677-682 (July), 1927.
5. Godfrey, Edward S., Jr., M.D. Comparative Value of State Districts and County Districts as the Basis of Local Health Organization. *A.J.P.H.*, 26, 5:465-470 (May), 1936.
6. Committee on Neighborhood Health Development. New York City Department of Health.
  1. *Health Center Districts, New York City*. Statistical Reference Data, 1929-1933. 140 pp. Maps.
  2. *Report on Activities of Health District Committees, 1938*. 11 pp.
  3. *How the Money Is Spent: A Study of the Costs . . . Health District Administration*. New York City. 1936. 108 pp.
  4. *District Health Development*. City of New York. Building Program as Related to the Master Plan for the City of New York. LaGuardia and Rice. 53 pp. Maps, Illustrations, Floor Plans.
  7. Funds Available for Special Health District. *Baltimore Health News*, July, 1932, p. 49.
  8. Eastern and Western Health Districts Enlarge. *Baltimore Health News*, Oct., 1938, pp. 76-77.
  9. Eastern Health District Ten Years Old on September 1. *Baltimore Health News*, Sept., 1942. Bibliography.
  10. Ministry of Health of Great Britain. Consultative Council on Medical and Allied Services. *Interim Report on the Future Provision of Medical and Allied Services*. (Cmd. 693.) May, 1920. pp. 28. Map and Diagrams.
  11. Ministry of Health of Great Britain. *A National Health Service*. (Cmd. 6502.) New York: Macmillan, Feb., 1944, 85 pp.
  12. Pearse, Innes H., M.D., and Crocker, Lucy H., B.Sc. *The Peckham Experiment: A Study of the Living Structure of Society*. London: George Allen and Unwin, Ltd. 333 pp. Illustrated.

# Some Phases of School Health Services

LEONA BAUMGARTNER, M.D., F.A.P.H.A.

*Director, Bureau of Child Hygiene, Health Department, New York, N. Y.*

THE philosophers and historians of both medicine and education often point out that the development of each of these disciplines has been widely influenced by contemporary economic, social, religious, and political thought and practice. Our attitude toward children is similarly influenced. Not all individuals nor peoples love children. A modern anthropologist,<sup>1</sup> for example, studied human behavior in those Pacific Islands which were headline news in the war. She related the abundance of food in the fertile land of the Arapesh to the love and care lavished on their children. In the nearby land of the Mundugamors, a mountainous country where making a living was hard, children were very unpopular. She raises the question whether economic status does not affect our attitude toward children. In the matriarchal society of Babylon, social and cultural patterns determined that the female infants, not the male infants, be sacrificed. Here social forces determined attitudes toward children. Or let us recall the Middle Ages when adults were so concerned for the welfare of the soul that they accepted physical suffering and cruelty to children as a matter of course. Or let us look at the last decade in our own country. In depression years the labor market was glutted; adolescents were an additional threat, so we treated them as children, lured them into staying in school, and gave them as little responsibility as possible. A war boom came. Overnight we needed labor—we needed adolescents—and our attitudes changed. Adolescents were no longer

children. They were young adults upon whom we heaped responsibilities, temptations, work, accelerated courses in schools, and money, and wondered why they sometimes seemed ill prepared for the new experiences. In similar ways we can relate many changes in medicine and education to changes in political, economic, or other phases of contemporary living.

And what does this augur for school health? Simply that school health too will reflect the changes which contemporary thought and practice bring to medicine, to education, and to society's attitude toward children. One has only to follow the story of school health in this country to see this. School medical services allegedly were started first in 1894 in Boston and in 1897 in New York City. The fear of spread of contagious diseases appears to have been the chief reason for establishing the services. By 1913, however, the recognition and treatment of contagions of eyes and skin, and the detection and follow-up of physical defects were a part of the program, at least in New York City. Some efforts were made to bring teacher and physician together, but by and large the program of school health in this country developed on the foundation stones of communicable disease control, annual medical inspection, and some follow-up of physical defects.

Education was then concerned with teaching of subject materials. To the three R's had been added other subjects, it is true, but the school existed largely for the purpose of teaching specific

facts to pupils. And medicine, too, was engrossed in special subjects. It was triumphant over the control it had recently achieved over bacterial infections as a result of the discoveries of those golden decades between 1884 and 1904 when the etiological agents and epidemiology of so many common diseases were first discovered. The medical specialties were developing rapidly. Every medical meeting was putting into the hands of the physicians new tools. Many became so complicated that inevitably independent specialties developed rapidly and emphasis on more accurate diagnosis and more rational therapy dominated the medical scene.

Little wonder that the chief concern of the school medical service was to discover physical defects in children and that there was not much integration of its program into the rest of the educational activities in the school.

New days, however, were ahead. Education was to benefit by a concept of what a child *might* become and new knowledge of his needs. Studies of growth and development in normal children, measurements of intellectual capacities, experimental studies in animal behavior, development of concepts in educational psychology, all left their mark on educational systems. *The whole child* was the watchword of the new order—and this interest in him brought emphasis on an education that prepared a child for living in a constantly changing world in contrast to one that crammed facts into his head. So his health, his family background, his interests, his hobbies, all came into the classroom.

Medicine, too, was acquiring new interests; prevention became more common in the medical vocabulary; courses in preventive medicine and public health were added to the medical student's curriculum; the well, in addition to the sick, were subjects of intensive research; the supervision of a well child

was accepted as part of the routine services given by a pediatrician; psychiatry, even though its techniques are not widely accepted, emphasized new approaches; seminars and journals discussed psychosomatic medicine; foundations, like the Nuffield Foundation in England, and the Milbank Fund in our own country, gave money to support programs to study the relations between medicine and social science.

#### WHAT LIES AHEAD?

And what do these changes in medicine and education mean for school health? Not all the answers are clear, but some *are* apparent. Behind us are days of a sole interest in morning inspection and exclusion from school as effective means of controlling the spread of communicable disease. Behind us are days in which satisfaction is gained in piling up large numbers of routine inspections and examinations, even if such statistics still do appeal to budget directors. Behind us, we hope, are over-specialized, independent and uncoordinated efforts in caring for such problems as defective vision, emotional disorders, truancy, and nutrition. Behind us are the days in which the doctor and nurse worked in a medical room as if in a vacuum, with little or no contact with teachers, principals, cafeteria managers, physical educators, and parents. For if the new aim of the school is to fit the child for living and if medicine has contributions to make to positive health—then educator, medical staff, and the home must work together.

But I believe it important to realize that the next steps are not clear and that we are already called upon to make certain decisions. After the last war the country was deluged with legislation regarding school health. The furor over the findings of physical defects in Selective Service in this war has already caused some to propose new legislation.

No less than twelve bills affecting school health have already been proposed in the 79th Congress. Medicine too is faced with many decisions and again the path is not clear. The public glibly discusses more medical care, and doctors disagree about how it should be given. Certainly this is a time when wise, imaginative, and strong leadership should be found—a time when all those who are concerned with the well-being of children should give their best thought to problems which inevitably confront us. So perhaps I may be allowed certain guesses as to what seems important today and what developments in terms of the other trends of the day have some chance of success. I shall discuss only six.

#### STRESSING THE NEEDS OF INDIVIDUAL CHILDREN

The first has to do with our acceptance of a democratic principle that we shall try to treat people as persons. The society and ideals we have inherited and in which we have felt so secure seem to be crumbling. The old rules are going—old rules of relations of men and women, black and white, parents and children, the rights of dictators. Confusion and insecurity surround us. But even in this confusion there is a voice—sometimes only faintly heard—a voice that says people shall be judged not in terms of race, color, and creed, not in terms of the formal schooling they have had, the clothes they wear, the social station to which they were born, but that they shall be judged as individuals and judged in the total environment in which each lives.

For school health this may mean that finding what the *individual* child needs and building a program to meet those needs comes first. If this be true, the school must be adapted to his needs and the school must go into home and community to find and to meet his

needs. The physician and nurse can no longer stay in the medical room. With teachers and parents and recreation and community leaders they must help plan for that one child. The physician's responsibility cannot end with a medical examination, no matter how well done. This does not mean that he does the total job, that he does not use his peculiar skills, that he takes over the job of other professional workers. But it does mean that the doctor adds the peculiar knowledge he can acquire of an individual child to that knowledge which other specialists have accumulated and with them plans a total program for that child in terms of that child's greatest need at *that* time.

#### THE CHILD ASSUMES MORE RESPONSIBILITY

To have children assume more and more responsibility for their own health status and the health of their communities is another trend I see ahead of us. The greater coöperation of educational, medical, and public health authorities confirms this. An example is the well publicized report, "Suggested School Health Policies," considered a policy charter since 1938 by eight national groups,<sup>2</sup> and recently revised. In several states, Oregon, Washington, Kansas, Illinois, and New York, for example, the coöperation of the State Departments of Education and Health, and the state dental and medical societies merits attention. And all over the country there are individual schools in which principal, classroom teacher, teachers of health and physical education, nutrition, and home nursing, school nurses, physicians, janitors, guidance experts, cafeteria managers, and parents are joining to plan health programs. These are ones in which the chief emphasis is affording opportunities whereby children can learn more of how to live in a healthful manner, and do learn to make wise decisions, to form

health habits based on scientific knowledge and to assume increasing responsibility for their own health.

Not as common are the opportunities to coöperate actively in the community health program, but they are increasing. From Boston recently came this fascinating tale. Here a health department, school authorities, and community leaders have a common council, and I quote from a report of it.

... One of our areas on the waterfront wanted a rat control program because they are in the area where ships coming from Europe touch our shore and where rat-borne diseases would appear if we get any from Europe. They decided that that was their problem after studying various other things. They took some steps themselves to solve it. Then they decided that they needed a rat survey and they said to us, "Do you suppose the health department would give us a survey?" We said we thought they would. Of course the health department has always been doing this, only they have been doing it as a policeman. But in this case we agreed upon the plan and the people on the committee kept a week ahead of the sanitary surveyors. They went to the people in the blocks that were to be surveyed next week saying, "We in our committee have arranged to get an expert over here to go over the houses from the standpoint of rat-proofing. Here is a great opportunity for us because this fellow knows all about it and he will be here next week. He will tell you how, simply and with the least expense, you can protect your own place. I hope you will plan to go over the house with him when he comes."

... our (school) shop work department taught boys at the junior high school level how to do the five or six things that our survey showed were most commonly needed in rat-proofing homes. Our parochial schools didn't happen to have a shop course in that section of the city, so the public schools arranged for parochial school boys to come over to the public school shops and learn about this particular technique. Then with the present shortage of labor, the boys at the 'teen age, finding they could do more than we thought they could a few years ago, undertook some of this job of rat-proofing their own homes.

Do you see the point here? In the north end of Boston they solved the rat problem.

Ten or fifteen years from now these youngsters go to a community where one of these problems exists. They are going to say, "Well we can lick that problem. We did that when I was in junior high school where I grew up." If they operate on the old system in the public schools and we talk about these things and never do anything about them, ten or fifteen years later this person will have grown up and moved to a community where there is this problem. He will say, "You always have rats. There is nothing you can do about it. They had it in the county I grew up in. Nothing whatever was done about it. Everybody talked about it but nothing was done."<sup>3</sup>

This practical experience in assuming responsibility for community health is a kind of training in democracy that should bear fruit. Of course it may be that in our post-war world, state and school will take over more responsibilities and children and parents less. Only last week I sat in a group in one of our schools in which the argument was in essence, "We can get more defects corrected faster if we just take the children to the clinic." Yes, more defects corrected faster perhaps, but at what a price! But suppose the school or government does assume greater responsibility in providing service, parents and pupils still need to know what is being done, and why. No matter what comes—free enterprise in medicine as we know it today, or socialized medicine as it is commonly conceived—this education of parents and children is still essential.

#### THE PLACE OF MASS TECHNIQUES

A third trend I should like to discuss is the wider use of and development of mass techniques. Should not periodic x-rays be available for all school children? Newer laboratory tests for nutritional and metabolic deficiencies will become available to aid in our present dilemma of adequately diagnosing the "below-par child." We have long accepted the Snellen test as a rough method of selecting children who should

be seen by an oculist, and many of us accept the evidence that teachers can test accurately certain of these children. Is it not possible that many testing devices which can be manipulated by non-medical staff on masses of children will be developed? If so, some of the work the physician and nurse now do may be done by others less skilled or with other training. Such tests and the use of those less well trained in medicine may also become more important in post-war years if we are short handed for doctors and nurses. If time and money may thus be saved and efficiency gained, the school program will not lose.

#### THE PROBLEM OF SCHOOL EXAMINATIONS AND TREATMENT

A fourth trend, and an essential development for the future, is to bring together the medical inspection program, with which schools are traditionally associated, and treatment facilities in hospitals, health centers or private physicians' offices. No longer can we tolerate the relatively ineffective schemes by which we have tried to lead the child down the pathway to correction. That pathway, now long, crooked, full of obstacles, must become straight and direct, and it is our job as responsible physicians and nurses to see that it becomes so.

There is a trend toward having the school depend upon the examination by the child's own physician. In New York City schools in 1944, 35 per cent of entering children were examined by the private physician, in contrast to 10 per cent in 1938. If such a system is used, however, great care must be taken that the examination be more than a casual inspection and that a careful record be returned to the school giving the information it needs for the guidance of the child. And the private physician must learn that the school has information important to him in diag-

nosis and may help him in his plans for care of the child. On the other hand, there are also those who apparently, out of their discouragement in seeing few school children get adequate medical care, would set up elaborate diagnostic and therapeutic facilities within the school.

The new Education Bill in England includes a clause, for example, which imposes on local authorities the duty of providing for the medical inspection and treatment (other than domiciliary) of all young persons from approximately 5 to 18, such treatment to be provided free of cost, even as school lunches are to be free. How this will be done is not entirely clear now, for educational authorities are waiting to see how the National Health Scheme will be set up. It is clearly recognized there, however, that the job of caring for school children must be done. Inasmuch as in his first 16 years a child spends total days equalling only  $2\frac{1}{2}$  years in the school room, the necessity of placing the medical program within the school can be sharply questioned. Moreover, the child cannot accurately be judged except as a member of a family and a community. Certainly the well trained school physician and nurse with their special knowledge, experience, and interest in problems of school children have much to contribute. The place at which examinations are done matters little if it be clearly understood that the purpose of doing them is to understand as much as possible about the child, to give him the benefit of the best that medical science has to offer to guide him so he will like to live in a healthful manner, and to help all those who work with him to understand what his needs are. How to do this seems to me our hardest job.

#### SCHOOL HEALTH IN RURAL AREAS

A fifth trend I see today—though perhaps I should only say it is a



glimpse in that direction—is an interest in health of children in our rural areas. Let us not forget that more than 50 per cent of our school age children live in population centers of 2,500 or less. And with few exceptions such centers have no school health program. The school buildings are notoriously insanitary. Health education or instruction if recognized at all is fragmentary, and outmoded in both content and method. Children go through their entire school career without seeing a physician or nurse unless acutely ill. Here indeed is a problem of paramount importance.

#### MENTAL HYGIENE AND SCHOOL HEALTH

The last trend and problem I wish to bring to your attention is our growing interest and need for mental hygiene as part of the school program. Child guidance clinics are growing up all over the land, but usually they can treat only the most aggravating cases. There is little time for prevention, for bringing to teacher, nurse, and doctor wider understanding of what leads to difficulties. We need more child guidance workers, yes—but also we need to know more of what leads to the need for as much readjustment for children—and we need desperately to put into practice what we already know in this field. Of what use are the hours of work the psychiatrist, the psychologist, and the psychiatric social worker put on Johnny Jones if he returns to a classroom which destroys all their efforts? In face of the fact that one out of every twenty pupils aged 15 eventually gets to a mental hospital, we must do something to prevent behavior disturbances from occurring.

I support, then, a thesis that changes are coming and must come in school health programs. To plot the course is not easy, but it must be done. And let us remember in the doing that it is not enough to secure more money to do the same old job. Active research of a

kind we have not really tried is desperately needed to help solve our most pressing problems. We must train thousands of new workers—doctors, nurses, teachers, specialists of all kinds—and we need to have a realistic program for them to operate.

May I point out a few practical and simple things we can do in school health programs today before the changes come:

1. We can emphasize the individual child. We can be sure that something is really accomplished for those we choose to serve. We can select those most in need of medical care for immediate care.

2. We can bring parents into the school when children are examined so they become a part of the team, so that they know what their children need, so that doctors can use medical histories as well as physical findings in arriving at conclusions.

3. We can get from and give to teachers more information on individual children.

4. We can look at the school environment and program and see how they need to be changed to meet children's needs. New plumbing may not be available now, but cleanliness, safety practices, adequate light, a good psychological atmosphere in the class room are not and never have been rationed.

5. We can question sharply all present practices and discard outmoded and ineffective ones immediately. Irrespective of pressures put on us as physicians, nurses, or administrators to do this and that, we must say "no" when asked to do what is unsound.

6. We can ask ourselves realistically what the children in our particular neighborhood need and, in coöperation with other community leaders, study ways in which our neighborhood can meet these needs.

7. We can pay particular attention to the nutrition problems and mental

hygiene aspects of the school program, both likely to be neglected.

8. We can as physicians and nurses better prepare ourselves for the complicated job that surely lies ahead. A knowledge of more than medicine is essential. A mere glance at the qualifications for school physicians recently set by various experts reveals<sup>4</sup> how changed is the task of tomorrow's school physicians. Let us hope we shall be worthy of the trust placed in us.

## REFERENCES

1. Mead, Margaret. *From the South Seas*. New York: William Morrow. See *Sex and Temperament*, xiv, 335 pp.
2. Suggested School Health Policies—A Committee Report. *J. Health & Phys. Educ.*, XI, 5, 6 (May and June), 1940.
3. Turner, Claire E. The Administrator in Relation to the School-Community Program. *Health Education, Institute in Health Education for School Administrators*, Jan. 6-8, 1944. Minneapolis: Univ. of Minn. (Mimeographed.) 66 pp.
4. Proposed Report on the Educational Qualifications of Medical Administrators of Specialized Health Activities [By] Committee on Professional Education of the American Public Health Association. *A.J.P.H.*, 34, 7:746-749 (July), 1944.

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## Rochester Regional Hospital Council Formed

The Council of Rochester Regional Hospitals has been established in a 5 year agreement with the Commonwealth Fund. Said to be the first of its kind in the country, the unit was established as an experimental plan to give rural hospitals the advantages of contact with the city medical center and opportunity to keep abreast of technics in use in city hospitals.

Terms of a 5 year contract provide for an annual grant of \$275,000 from the Commonwealth Fund, part of which will be used to establish an educational and consultative program for professional hospital personnel and part used for expansion of rural hospitals and purchase of additional hospital equipment if the need becomes apparent. Thomas R. White was named President of the new council at an organization meeting February 26.

The Rochester region was chosen by the Commonwealth Fund as the site

of the experimental program after a study of a dozen or more areas possessing medical centers, such as that provided by Strong Memorial Hospital and University of Rochester School of Medicine and Dentistry. It is expected that other regional programs will be established on the lines of the one being set up in Rochester if the experiment proves successful.

Albert D. Kaiser, M.D., Health Officer of Rochester, has been named Executive Director. Dr. Kaiser will continue his position as Health Officer, but will immediately take over the direction of the experimental regional hospital and medical project. Paul A. Lembcke, M.D., formerly State District Health Officer in Rochester, will serve as Medical Associate, effective April 1. Charles M. Royle has been named Business Manager, but will continue in his position as Executive Manager of the Rochester Hospital Council.

# Epidemiology of Venereal Disease

THOMAS H. STERNBERG, LT. COLONEL, MC, AUS

*Venereal Disease Control Branch, Infectious Disease Control Division, Preventive Medicine Service, Office of The Surgeon General, United States Army, Washington, D. C.*

THE accompanying table presents a collection of epidemiologic information obtained from 71,156 soldiers acquiring a venereal disease in the United States during the period January 1 to June 30, 1945. The data are arranged to show the total number of infections acquired by Army personnel in each of the forty-eight states and the Military District of Washington, and further to show in which of the Army Service Commands the infection was discovered. These figures illustrate on a massive scale the broad geographic pattern of the dispersion of the venereal diseases.

In consideration of these data it must be borne in mind that in addition to leave and furlough, Army personnel are subject to involuntary movement throughout the country. Furthermore, the total number of infections acquired in any given state is to a large extent dependent upon the number of Army personnel stationed in or visiting that state, and is therefore not necessarily indicative of the incidence of infectious venereal disease in the immediate civilian population. A study of these statistics reveals that 32 per cent of all Army venereal infections were diagnosed and treated in Service Commands other than those in which exposure took place. It must be remembered that each Service Command comprises several states. A further breakdown showed that 50 per cent of all infections were acquired in one state and diagnosed in another. It is probably true that the movement from place to place of the

soldiers involved in this study is greater than among civilians in peacetime. Nevertheless, even in normal times, the United States is a nation of tourists and it is also anticipated that large population shifts will occur during the reconversion period. This has added importance, since the newcomer and the transient infected with venereal disease are usually the most difficult for the health department to locate.

These data demonstrate most forcibly that no single state by its own efforts can hope completely to control the spread of the venereal diseases, since a large percentage of the newly diagnosed cases in that state will be traceable to a source located in another state. For example, during the period of this study, a total of 9,641 venereal infections in Army personnel were diagnosed and treated in one of the eight states comprising the Ninth Service Command. Of these, in 4,540, or 47 per cent, the disease was acquired in one of the other forty states. The soldiers travelled to the Ninth Service Command during the incubation or early infections period and undoubtedly exposed and infected many civilians before their disease was discovered. Similarly, in New York, New Jersey, and Delaware, only 2,461, or 55 per cent of the 4,451 Army venereal infections diagnosed were actually acquired locally. The others came from widely scattered areas of the country, constituting a continuous source of new infections over which these states had no method of control.

TABLE 1

*Data Showing Place of Exposure and Place of Diagnosis in 71,156 Venereal Infections in Army Personnel During Period January 1, 1945, to June 30, 1945*

Service Command	State in Which Exposure Occurred	Service Command in Which Diagnosis Was Made									MDW*	Total Infections Acquired in Each State
		1	2	3	4	5	6	7	8	9		
4	Alabama	36	57	157	1709	56	14	47	179	182	3	2440
9	Arizona	1	6	3	19	..	2	15	32	379	1	458
8	Arkansas	5	43	49	127	27	10	82	833	92	1	1269
9	California	22	22	33	115	18	29	66	161	2879	1	3346
7	Colorado	4	6	6	43	4	5	758	44	86	5	961
1	Connecticut	92	16	9	13	2	1	2	11	5	3	154
2	Delaware	2	93	36	8	1	1	1	11	4	2	159
4	Florida	17	64	115	2070	42	27	49	103	124	5	2616
4	Georgia	55	123	208	2606	60	12	67	140	167	11	3449
9	Idaho	..	..	1	..	2	..	5	8	172	..	188
6	Illinois	32	75	113	255	123	963	205	188	323	11	2288
5	Indiana	10	28	71	144	635	141	43	100	102	5	1279
7	Iowa	4	6	19	34	22	22	308	80	42	1	538
7	Kansas	11	7	26	41	12	10	710	94	61	..	972
5	Kentucky	33	38	82	309	1690	17	45	135	87	7	2443
8	Louisiana	50	169	108	287	25	15	55	2368	340	1	3418
1	Maine	121	21	10	10	9	1	3	10	1	1	187
3	Maryland	38	119	2125	124	37	5	27	43	96	26	2640
1	Massachusetts	440	41	37	47	9	6	11	21	28	2	642
6	Michigan	26	34	72	167	114	555	50	109	115	7	1249
7	Minnesota	2	7	22	35	8	23	197	54	45	1	394
4	Mississippi	46	58	151	983	38	10	58	164	218	2	1728
7	Missouri	27	55	80	158	45	250	1351	309	271	3	2549
9	Montana	1	..	5	7	..	2	10	8	48	..	81
7	Nebraska	2	4	7	14	5	2	481	51	35	..	601
9	Nevada	3	..	1	7	1	4	3	5	141	..	165
1	New Hampshire	55	8	1	4	2	1	..	1	1	1	74
2	New Jersey	17	471	130	71	15	8	43	37	21	4	817
8	New Mexico	4	..	5	13	2	..	13	355	37	..	429
2	New York	159	1897	326	238	58	28	77	105	130	22	3040
4	North Carolina	85	110	365	1751	62	16	74	141	185	10	2799
7	North Dakota	1	..	3	4	..	2	26	10	9	..	55
5	Ohio	54	53	216	371	1588	60	64	214	171	8	2799
8	Oklahoma	9	29	31	73	6	13	90	1476	104	..	1831
9	Oregon	1	1	1	12	4	1	3	16	283	1	323
3	Pennsylvania	83	317	2438	251	111	13	49	111	115	29	3517
1	Rhode Island	27	4	6	6	4	1	2	4	1	1	56
4	S. Carolina	42	61	157	1340	21	7	25	69	139	2	1863
7	South Dakota	1	..	2	5	..	10	88	13	12	..	131
4	Tennessee	36	56	165	1250	185	22	62	196	153	8	2133
8	Texas	26	92	125	323	76	26	169	5322	518	15	6692
9	Utah	..	1	2	8	..	1	8	7	284	..	311
1	Vermont	17	9	2	2	..	1	1	1	1	..	34
3	Virginia	52	101	2930	267	80	15	35	79	349	69	3977
9	Washington	5	17	8	30	10	1	14	26	915	2	1028
5	W. Virginia	25	39	222	271	502	9	25	113	63	15	1284
6	Wisconsin	3	6	14	43	21	149	11	32	23	1	303
7	Wyoming	..	10	3	2	4	2	119	5	30	..	175
	MDW*	34	77	753	105	18	4	10	33	54	183	1271
Total No. diagnosed per Service Command		1816	4451	11451	15772	5754	2517	5657	13627	9641	470	71156

\* MDW = Military District of Washington

These facts are ample justification for New York, Ohio, or any other state, to have a legitimate interest in the effectiveness of the venereal disease control programs carried on by Illinois, Texas, California, or any other distant state, and to be critical should these

programs fail to meet acceptable standards. The data reaffirm the need for the closest possible relationships between the various states and a recognition by each state that it is both dependent upon and under obligation to its sister states in the pursuit of a vigorous con-

trol program. They emphasize the significant rôle of the federal and voluntary agencies in stimulating, support-

ing, and coördinating venereal disease control programs of the various cities and states.

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## 10th Anniversary Public Health Association of New York City

The Public Health Association of New York City celebrated its 10th anniversary with a dinner on April 23. Putting aside its usual program of technical papers, the evening was devoted to a testimonial to Dr. Ernest L. Stebbins, retiring Health Commissioner of New York City. Speakers who summarized his accomplishments were the President of the association and New York City Deputy Health Commissioner, Sol Pincus, who acted as toastmaster; Mrs. Oswald B. Lord, member of the Board of the Neighborhood Health Development Committee and of the Board of Directors of Community Chests & Councils; Homer Folks, Secretary of the State Charities Aid Association; and Dr. George Baehr, President of the

New York Academy of Medicine. Dr. Stebbins acknowledged the tributes by giving credit to his Health Department associates and to the coöperation of voluntary agencies.

New officers elected were: *President*, Frank Kiernan, who has served as Secretary-Treasurer during the entire history of the Association; *Vice Presidents*, John L. Rice, M.D., and Helen Crosby; *Secretary-Treasurer*, Charles Freck; *Members of the Executive Board*, Leona Baumgartner, M.D., Ph.D., Arthur I. Blau, M.D., Horace Hughes, Charles Kraft, Fred L. Moore, M.D., Sol Pincus, C.E., and Clarence L. Scamman, M.D.; delegate to the Governing Council of the American Public Health Association, John L. Rice, M.D.

# Inactivation of Poliomyelitis Virus by "Free" Chlorine<sup>†</sup>

G. M. RIDENOUR, PH.D., AND R. S. INGOLS, PH.D.\*

*Department of Environmental Health, School of Public Health, University of Michigan, Ann Arbor, Mich.*

THE effect of chlorine on poliomyelitis virus has been a matter of considerable interest in recent years. Previous investigations on this subject have led to some general conclusions that, while the virus can be inactivated by exposure to chlorine, the amounts needed for this purpose are beyond the normal residual concentrations carried in the disinfection of water supplies and swimming pools. Moreover, the time of contact required for disinfection was likewise beyond practical limits of application.<sup>1-3</sup> These and other investigations showed that in relation to most bacteria, poliomyelitis virus was decidedly more resistant to the germicidal effect of chlorine.

The conclusions drawn from these studies were based upon the use of either the orthotolidine or starch iodide method of determining residual chlorine, which at that time were the standard methods for the measurement of chlorine residuals. However, later studies have demonstrated that these methods do not give a true evaluation of the concentration of free uncombined chlorine in water or any other solution containing ammonia, nitrogenous compounds, and other organic matter. In

the presence of such materials, chloro-compounds are formed which, though having an oxidation potential higher than orthotolidine or iodine under the conditions of the tests, also have a potential much less than that of uncombined or free chlorine. These chloro-compounds by virtue of their lesser redox potential have lesser disinfectant capacity. As a consequence, the inactivating or bactericidal effect of chlorine itself may not be truly evaluated without taking this factor into consideration, particularly in the case of the brain or cord suspensions used in studies with poliomyelitis virus.

Newer knowledge on chlorine testing has now made it possible to measure more accurately the concentration of free or uncombined chlorine in the hypochlorous state in organically polluted solutions. This is done by the orthotolidine-arsenite test.<sup>4</sup>

In view of these considerations it was thought important to re-investigate (1) the effect of chlorine and (2) a chlorine bearing compound such as chlorine dioxide on the poliomyelitis virus in the light of the newer knowledge of chlorine measurements given by this test.<sup>4</sup> The following studies show by this means the effect of "free" chlorine or its equivalent oxidation potential to orthotolidine on inactivation of poliomyelitis virus.

## METHOD OF INVESTIGATION

The virus used was obtained from

\* With technical assistance of Margaret Abendroth, Virus Laboratories of the Department of Epidemiology.

The authors are also greatly indebted to Dr. Thomas Francis, Jr., Chairman of the Department of Epidemiology, School of Public Health, University of Michigan, whose coöperative assistance made these studies possible.

<sup>†</sup> This study was aided by a grant from the National Foundation for Infantile Paralysis, Inc.

TABLE 1

*Effect of "Free Chlorine" on Inactivation of Poliomyelitis Virus from Chlorine Gas*

	Experiment No. 1				Experiment No. 2		
Chlorine	Residual p.p.m.				Residual p.p.m.		
Am't Added p.p.m.	OT	OTA	Results		OT	OTA	Results
			(10 minute contact)				
control	0	0	8/7/7		0	0	8/6/4
2	tr	tr	7/2/1		no spec,		
3	0.15	0.05	8/5/2		0.07	0	8/5/1
5	0.30	0.10	7/5/4		0.55	0.05	8/2/2
7	1.00	0.30	8/3/0		0.90	0.10	8/1/1
10	1.70	0.50	7/2/0		1.50	0.30 *	8/0/0
15	2.50	0.60	8/0/0		2.50	0.35	8/0/0
	concurrent infection in mice. Results not used in Table 4.						
			(30 minute contact)				
control	0	0	8/7/7		0	0	8/6/4
2	tr	0	no spec.		0	0	8/1/1
3	0.10	tr	no spec.		no spec,		
5	0.50	0.07	8/1/0		0.25	0.05	8/2/2
7	1.00	0.25	8/0/0		0.60	0.05	8/1/0
10	2.00	0.45	8/0/0		1.20	0.10 *	8/0/0
15	3.00	1.00	8/0/0		2.00	0.30	8/0/0
	concurrent infection in mice. Results not used in Table 4.						

Legend: OT = Total Residual Chlorine by Standard Orthotolidine Reagent  
OTA = "Free" Chlorine or hypochlorous acid

8/7/3 = Example, 8 mice inoculated, a total of 7 mice dead, 3 of the dead showed definite symptoms of paralysis.

TABLE 2

*Effect of "Free Chlorine" on Inactivation of Poliomyelitis Virus from Chlorine Dioxide (ClO<sub>2</sub>)*

Chlorine Dioxide	Experiment No. 1			Experiment No. 2		
	Residual p.p.m.		Results	Residual p.p.m.		Results
	OT	OTA		OT	OTA	
Am't Added p.p.m.						

Legend: See Table 1

paralyzed mice following intracerebral inoculation with the Lansing strain of poliomyelitis virus. Cords were taken from animals showing paralysis between the 3rd and 12th days after inoculation and made up into a 20 per cent (1:5) suspension in physiological salt solution. The suspension was centrifuged at 2,000 r.p.m. and the centrifuged portion frozen at  $-72^{\circ}\text{C}$ . until used in the test. Just prior to the test the frozen suspension was thawed, diluted 1:1, and centrifuged at approximately 10,000 r.p.m. to eliminate as much suspended organic matter as possible. Titration of the Material by intracerebral inoculation of mice gave a lethal end point between  $10^{-3}$  and  $10^{-4}$ . The concentration of the virus suspension employed in the tests for inactivation was 1:500. At this dilution the pH of the suspension was 7.2, ammonia nitrogen 0.15 p.p.m., and organic nitrogen 15 p.p.m.

The method of treatment with

chlorine and chlorine dioxide consisted of placing 50 ml. amounts of the (1:500) virus suspension in a series of 150 ml. sterilized glass stoppered bottles. Various concentrations of the chlorine or chlorine compounds in solution volumes of 0.5 to 3.0 ml. were then placed in the bottles and mixed by shaking immediately after the addition and at intervals during the period of the test. After a predetermined period of contact, 10 or 30 minutes, residual tests for chlorine were simultaneously made on each of the mixtures. At the same time a portion of the sample was treated with sodium thiosulfate to neutralize the chlorine. This portion of the sample was used for intracerebral inoculation of mice under light anesthesia. An inoculation of 0.03 ml. was given to each mouse. A part of this same sample was also cultured for bacterial sterility in nutrient broth.

The orthotolidine arsenite method<sup>4</sup>

TABLE 3

*Effect of "Free Chlorine" on Inactivation of Poliomyelitis Virus with the Use of a Mixture of Chlorine and Chlorine Dioxide (Proportion 1:1 on OT Basis)*

Mixture  Total Am't Added p.p.m. (OT)	Experiment No. 1			Experiment No. 2		
	Residual p.p.m.		Results	Residual p.p.m.		Results
	OT	OTA		OT	OTA	
(10 minute contact)						
control	0	0	8/5/5	0	0	8/5/3
1	0.05	tr	no spec.	0.05	0	no spec.
2	0.15	0.05	no spec.	0.10	0	8/1/0
3	0.25	0.05	8/3/0	0.25	tr	no spec.
4				0.35	tr	8/2/0
5	0.60	0.20 *	8/0/0	0.50	0.05	no spec.
6	1.00	0.30	8/0/0	0.80	0.07 *	8/0/0
7	1.50	0.50	8/0/0	1.20	0.25	8/0/0
10	2.00	1.50	8/0/0	3.00	1.20	8/0/0
(30 minute contact)						
control	0	0	8/5/5	0	0	8/5/3
1	0.05	0	no spec.	0.05	0	no spec.
2	0.05	tr	8/2/1	0.10	0	no spec.
3	0.15	0.05	no spec.	0.20	0	8/2/1
5	0.50	0.10 *	8/0/0	0.50	0.05 *	8/0/0
6	0.70	0.20	8/0/0	0.70	0.07	no spec.
7	1.00	0.30	8/0/0	1.00	0.07	8/0/0
10	2.00	0.70	8/0/0	2.00	0.80	8/0/0

Legend: See Table 1



TABLE 4

*Relation of Quantity of Chlorine Applied, Total Residual Chlorine by OT, and "Free" Residual Chlorine by OTA to Inactivation of the Virus*

<i>Source of Chlorine</i>	<i>Chlorine Applied p.p.m.</i>	<i>Am't of OT for Inactivation p.p.m.</i>	<i>Am't of OTA for Inactivation p.p.m.</i>
<i>(10 minute contact)</i>			
Cl <sub>2</sub>	10	1.50	0.30
ClO <sub>2</sub>	5	0.50	0.10
	5	1.20	0.20
Cl <sub>2</sub> + ClO <sub>2</sub>	5	0.60	0.20
	6	0.80	0.07
		Average	0.18
<i>(30 minute contact)</i>			
Cl <sub>2</sub>	10	1.20	0.10
ClO <sub>2</sub>	5	0.50	0.10
	3	0.55	0.05
Cl <sub>2</sub> + ClO <sub>2</sub>	5	0.50	0.10
	3	0.50	0.05
		Average	0.08

Legend: See Table 1

was used in testing for residual chlorine. This method gave a measurement of either the "free chlorine," combined chlorine such as chloramines, or total available chlorine. The results of inactivation were related to "free chlorine" hereinafter referred to as OTA and total chlorine referred to as OT.

Eight mice were inoculated from each sample representing each concentration of applied chlorine. Daily checks were made on the mice for a period of 30 days. Both deaths and paralysis were noted. However, no transfers for the purpose of corroboration were made from dead mice in which paralysis was not observed. As a result, some deaths may have been preceded by paralysis occurring between inspection intervals.

#### RESULTS

The results of the studies conducted in the manner described above are shown in Tables 1-4 inclusive. The column labelled "results" in the tables represents the data from the animal inoculations. The first figure represents the number of animals inoculated, the second the total number of deaths, and

the third those animals showing definite symptoms of paralysis. Interpretation as to effective chlorine residual was made on the basis of that amount of residual chlorine which inactivated sufficient virus so that neither deaths nor paralysis occurred. Asterisks are placed on Tables 1, 2, and 3 at this point. It will be noted that the value taken on this basis is quite consistently only one increment of dosage from that which permitted at least one instance of definite paralysis. Table 4 shows an organization of the results in Table 1 through 3 with respect to the amount of chlorine applied, the OT residual and the OTA residual as related to the complete inactivation of the virus.

#### DISCUSSION

Inspection of the data in the Tables 1-4 shows that there is no definite relation between inactivation of virus and the amount of chlorine applied nor the orthotolidine residual measured by the standard acid orthotolidine (OT) reagent. Residuals, measured by standard orthotolidine residuals, required for complete inactivation varied from 0.5 p.p.m. to 1.5 p.p.m. after 10 minute

contact period. After 30 minute contact the residuals varied from 0.5 p.p.m. to 1.2 p.p.m. However, the relationship between inactivation of the virus and OTA residual is quite definite, particularly in the 30 minute period of contact. Inactivation was secured with a minimum of 0.05 p.p.m. and a maximum of 0.10 p.p.m. of OTA residual in all instances regardless of the type of chlorine bearing material or the quantity of organic matter present in the suspension. The results with 10 minute period were less consistent, owing presumably to the very short period of time and the attendant lack of homogeneity in the mixed preparations.

These results are in sharp contrast with previous investigations with respect to (1) reliability of the relationship of chlorine residual to inactivation of poliomyelitis virus, (2) the required concentration of residual chlorine, and (3) the time needed for inactivation. Whereas previous work has shown that inactivation of the virus required as strenuous conditions as 0.5 p.p.m. of OT or starch iodide chlorine for  $1\frac{1}{2}$  hours to inactivate a 1:1,650 dilution of virus suspension, these results indicate that 0.3 p.p.m. of OTA ("free" or uncombined) chlorine will inactivate the strain of virus used in these studies in as short a time as 10 minutes. With a 30 minute period of contact, from a trace to 0.10 p.p.m. of "free" chlorine caused inactivation. In addition, there is a critical and consistent relationship between the "free" chlorine residual and inactivation of the virus. The difference in the two instances is that previous investigations of the effect of chlorine on suspensions of poliomyelitis virus have been based upon a test which did not give the true "free" chlorine residual, whereas the newly developed orthotolidine-arsenite test gives a much more accurate measure of this form of chlorine. This is the same "free" chlorine residual which is

thought of in connection with the "break-point" chlorination of water, but which also may occur in smaller concentrations before the "break-point" is reached.

The results from these studies show that chlorine, now in universal use for disinfection of water can be used in amounts which will result in inactivation of poliomyelitis virus and yet produce a satisfactory and palatable water. This is in contrast to previous beliefs that if poliomyelitis were determined to be a water-borne disease chlorine would not be practical for inactivation.

Also, the OTA test for residual chlorine now supplies a method of detecting the effective chlorine available for inactivation of the virus in treated waters.

It would also seem important that methods now in operation for chlorination of community waters in general be reexamined to determine their efficiency in providing "free" chlorine.

#### SUMMARY AND CONCLUSIONS

In contrast to previous studies, this investigation shows that chlorine is an effective inactivating agent for the Lansing strain of poliomyelitis virus if related to the actual "free" or uncombined chlorine residual in solution. Previous work has been related to inactivation by the total available residual chlorine in the medium, which may carry oxidation potentials from just above that of orthotolidine to that of "free" chlorine, depending on the proportions of each. Such a heterogeneous mixture of chlorine and chloro-compounds would logically show, by tests for total chlorine, varying requirement with respect to amounts of chlorine residuals and contact periods for inactivation of the virus. If, however, the inactivation is related to the oxidation potential equivalent to that of free chlorine, a relatively small residual and a relatively short time of contact are

needed. On this basis the effect of chlorine on inactivation of the virus is shown to be as follows:

1. A "free" chlorine residual of approximately 0.2 p.p.m., by OTA, will inactivate a 1:500 dilution of the virus after a period of 10 minute contact. With a 30 minute contact, approximately 0.1 p.p.m. is required. Results of investigation by the authors, yet unpublished, on a pure culture of *B. coli* show the same degree of tolerance.

2. The amounts of "free" chlorine needed for inactivation are well within the range of practical dosages used in water treatment and swimming pool sanitation, when "break point" chlorination is employed. However, these "free" chlorine residuals may be reached even before the "break," in which case carrying the disinfection to the "break," may not be required for inactivation provided the required "free" residual is present before that point is reached.

3. It appears that the effectiveness of the "free" chlorine residual is independent of the type of chlorine-bearing compound as long as the equivalent oxidation potential of "free" chlorine exists. In these studies the results were approximately the same with chlorine, chlorine dioxide, or a mixture of the

two, provided the material added was sufficient to give the required OTA residual. There was a slight tendency in favor of the chlorine dioxide OTA residual, but this was not outside the range of experimental error. Hence, it appears that the oxidation potential of the disinfectant system is a fundamental factor in the inactivation. This seems to be substantiated by the fact that ozone studies, while not shown in the data in this paper, show that an ozone concentration equivalent to 0.1 p.p.m. of free chlorine will also effectively inactivate the virus of poliomyelitis.

ACKNOWLEDGMENT—The chlorine dioxide used in these studies was prepared from sodium chlorite furnished by the Matheison Alkali Works, Inc. Representatives of this company also gave valuable suggestions in the laboratory preparation of the material.

#### REFERENCES

1. Kempf, J. Emerson, and Soule, Malcolm II. *Proc. Soc. Exper. Biol. & Med.*, 44:431, 1940.
2. Kempf, J. Emerson, Wilson, Martha F., Pierce, Marjorie E., and Soule, Malcolm II. *A.J.P.H.*, 32: 1366, 1942.
3. Trask, James D., and Paul, John R. *A.J.P.H.*, 31:239, 1941.
4. Gilcreas, F. Wellington, and Halliman, F. J. *J. Am. Water Works A.*, 36:1343, 1944.

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## Wisconsin Streamlines Department of Health

The January-March *Quarterly Bulletin* of the Wisconsin State Board of Health outlines the reorganization of the State Department of Health. There are now five main administrative sections, the last mentioned of which is entirely new. They are: General Administration, Preventable Disease, Sanitary Engineering, Maternal and Child Health, and Local Health Service. Dr. Allen Filek, formerly director of the

Tuberculosis Division, will head the newly created Local Health Service Section.

Following a rapidly growing trend in other states, a new Central Statistical Service has been created in the General Administration Section. This division will prepare statistical material for all the other divisions and make data available for the use of public health personnel throughout the state.

# Antitoxin Titers Following Immunization with Protamine-Precipitated Diphtheria Toxoid\*

VICTOR ROSS, PH.D., FRANCES L. CLAPP, AND  
BERTHA W. SCHIMPF

*Department of Biochemistry, College of Physicians and Surgeons, Columbia University, New York City, and Lederle Laboratories, Inc., Pearl River, N. Y.*

ONE of us has recently described the preparation and immunizing properties of protamine-precipitated diphtheria toxoid.<sup>1</sup> This new form of diphtheria toxoid (which contains less than 0.1 per cent alum) was found to produce less reaction than either "fluid" or alum-precipitated toxoid when tested by intradermal injection in human adults. Its nitrogen content, including that of the protamine present, is 0.006 † mg. per Lf. (Limes flocculation dose), considerably less than that of alum-precipitated toxoid. It is almost entirely free of bacillary protein. Guinea pigs produced 2 to 3 units of antitoxin 4 weeks after a subcutaneous injection of one dose (20 to 25 Lf.) and approximately 7 units 6 weeks after a second dose. The antigenicity of the new product was also measured by means of the Schick test in children and adults. Ninety-six per cent of 554 Schick-positive children who received one dose (20 to 25 Lf.) became Schick-negative. The interval between the injection and

subsequent negative Schick was, in 5 instances, less than 2 months, in 222 between 2 and 3 months; in 87, 3; in 25, 4; in 9, 5; in 57, 6; in 56, 7; in 13, 8; in 27, 9; in 33, 10 to 13 months. Among the 20 children who remained Schick-positive, the intervals between injection and subsequent test were 5 weeks (1 subject); 6 weeks (2); 2¼ months (8); 2½ months (3); 3 months (5); 11 months (1). Seven of 8 of these children who received a second dose and were retested became Schick-negative. To date, approximately 4,000 children have been injected with either one or two doses. No instance of sufficient discomfort to prompt a mother to call the child health station where the injections were given has arisen.

## METHODS AND RESULTS

It seemed that these data ought to be supplemented by measurements of antitoxin levels in the blood of children injected with one or two doses of protamine toxoid.† We began this study, therefore, by determining the antitoxin content of blood of young children before and after the subcutaneous admin-

\* A grant to Columbia University from Lederle Laboratories, Inc., in support of this investigation, is gratefully acknowledged.

† This is the value when proteose-peptone is used in the medium in which the organism is grown. If a medium with "chemically defined" components (amino acids from casein) is used the total nitrogen is 0.0024 mg per Lf.

‡ Although antitoxin titrations had previously been done, and reported<sup>2</sup> before and after one injection of protamine-toxoid in 28 children, and sharp rises in concentration were found, all but one of the subjects possessed varying amounts of antitoxin to begin with.

TABLE 1

*Antitoxin Titer Before and After the Injection of One Dose (20 to 25 Lf) of Protamine-Precipitated Diphtheria Toxoid*

Subject	Age at Time of Immunization Months	Antitoxin Titer (in Units)		Interval Between Injection and Bleeding Months
		Before	After	
L.T.	11	1/2,000	1/25 to 1/10	2
Wm.T.	12	1/2,000	1/25 to 1/10	2½
J.F.	12	1/2,000	1/1,000	2½
A.P.	9	<1/2,000	1/10	2 mos. 9 days
P.B.	11	<1/2,000	1/250	3
D.G.	9	<1/2,000	1/100	3
J.A.B.	12	<1/2,000	1/100 to 1/50	4
N.C.*	9	1/1,000 to 1/500	1/10 to 1/5	2½
D.D.*	9	<1/2,000	1/2	3

\* These two children received 2 doses of toxoid with an interval of 1 month.

istration of either one or two doses of 20 to 25 Lf. units each. We soon experienced considerable difficulty in obtaining permission from the parents to take the second sample of blood. Many of the subjects were 9 months to a year old at the time of their first bleeding. We therefore decided to take a sample of blood only after the immunization. We then had to choose between using as subjects only those children who were Schick-positive at the outset, or taking all the children who came to the health

station, without first doing a Schick test. Choice of the first method would give information as to the approximate upper level of antitoxin concentration but involved the possible criticism that the Schick test would contribute to the antigenic stimulus of the toxoid. Use of the second procedure included the certainty that the blood of some of the children would already have moderate amounts of antitoxin and that, consequently, misleadingly high values would be obtained in an unknown number of

TABLE 2

*Antitoxin Titers of Children Who Were Originally Schick-positive and Who Received One Dose of Protamine-Precipitated Diphtheria Toxoid*

Subject	Age at Time of Immunization Months	Antitoxin Titer	Interval Between Injection and Bleeding Months	Subject	Age at Time of Immunization Months	Antitoxin Titer	Interval Between Injection and Bleeding Months
R.F.	12	1/100	2½	E.D.	28	1/25	15
R.W.	12	1/100 to 1/50	3	J.K.	12	1/50	15
J.L.	12	1/10	3	J.C.	16	1/10 to 1/5	15
P.D.	6	1/500	3	J.H.	22	1/50 to 1/25	15
C.T.	9	1/25 to 1/10	3	B.N.	10	1/10 to 1/5	15
F.F.	10	1/250 to 1/100	3	J.N.	22	>1	15
Y.T.	9	1/1,000	3	W.S.	59	1/25	15
G.G.	8	1/5 to 1/2	3	J.M.	12	1/25	15
K.R.	8	1/250	3	D.R.	89	1/10 to 1/5	15
A.G.	18	1/10 to 1/5	11	P.D.	48	1/100	16
B.S.	9	1/10	12	S.T.	9	1/25 to 1/10	16
M.C.	11	1/10	13	H.Mc.	29	1/100 to 1/50	16
T.H.	21	1/250	13	M.Mc.	11	1/100	16
J.M.	9	1/25	14	E.E.	29	1/50 to 1/25	16
R.T.	9	1/25	14	G.L.	10	1/50 to 1/25	16
E.K.	13	1/100	14	S.B.	10	1/2 to 1	17
J.R.	58	1/100 to 1/50	14	G.M.	9	1/25	17
W.R.	41	1/50	14	L.S.	72	1/25 to 1/10	17
J.V.	14	1/5	15	E.K.	78	1/25 to 1/10	18
N.P.	73	1/50	15				

instances. The decision was to follow the first plan (use of Schick-positive children) because other investigators, including Phair,<sup>2</sup> have observed that, although some Schick-negative children are likely to produce antitoxin in response to the small antigenic stimulus of the Schick test, children who are Schick-positive produce none. In order to diminish further a possible contribu-

tion from this source to the eventual titer, the toxoid was administered within several days to a week after the Schick test was done in the belief that the short interval would accomplish this purpose.

The method of Glenny and Llewellyn-Jones<sup>3</sup> was used for measuring antitoxin. Each sample of human serum was tested in several dilutions by the guinea pig skin test method in compari-

TABLE 3

*Antitoxin Titers of Children Who Were Originally Schick-positive and Who Received Two Doses of Protamine-Precipitated Diphtheria Toxoid*

Subject	Age at Time of Immunization Months	Antitoxin Titer	Interval Between Second Injection and Bleeding Months	Subject	Age at Time of Immunization Months	Antitoxin Titer	Interval Between Injection and Bleeding Months
I.J.	11	1/5 to 1/2	2½	A.V.	10	1/50 to 1/25	12
R.M.	10	1/5	2½	F.J.	10	1	12
V.G.	9	1/5	2½	D.T.	28	1/5	12
H.Mc.	9	1/50 to 1/25	2½	Y.G.	9	1/5	12
G.O.	9	1/25 to 1/10	2½	V.U.	9	1/5	12
E.B.	9	1/10	2½	F.F.	9	1-10 to 1/5	12
W.D.	9	1/25	2½	S.G.	9	1/2	12
S.G.	9	1/10	2½	B.L.	9	1/10 to 1/5	12
J.M.G.	8	1/5	2½	M.L.	9	1/10 to 1/5	12
C.I.	12	1/2	3	D.M.	14	1/10	12
Y.G.	12	1/50 to 1/25	3	J.T.	11	1/10	12
E.L.	9	1/5 to 1/2	3	J.Z.	28	1/5 to 1/2	12
D.M.	9	1/5 to 1/2	3	M.V.	9	1/2	12
D.H.	12	1/5	3	I.V.	9	1/5	12
M.B.	10	1/2	3	R.M.	10	1/2	12
L.B.	10	1/5 to 1/2	3	J.R.	11	1/5 to 1/2	12
F.S.	9	1/5	3	J.M.	9	1/10	12
R.R.	9	1/10 to 1/5	3	M.M.	9	1/2	12
L.M.	29	1/5	3	L.R.	11	1/2	12
T.B.	9	1/5	3	Y.B.	9	1/2 to 1	12
P.P.	9	1/5 to 1/2	3	R.P.	9	1/2	12
V.R.	10	1/5	3	H.M.	9	1/10	12
C.W.	7	1/5 to 1/2	3	N.S.	10	1/5	12
K.W.	41	1/25 to 1/10	3	G.B.	12	1/10 to 1/5	12
I.W.	36	1/5	3	E.M.	9	1/10 to 1/5	12
L.C.	9	1/10 to 1/5	3	A.C.	9	1/10	12
O.B.	11	1/25	3	W.P.	9	1/5	12
C.P.	9	1/5 to 1/2	3	L.C.	12	1/10	12
W.B.	8	1/25 to 1/10	3	E.O.	10	1/5 to 1/2	12
G.B.	9	1	3	A.R.	10	1/5 to 1/2	12
I.C.	9	1/10	3	P.S.	9	1/5	12
G.W.	9	1/10	3	C.L.	12	1/5 to 1/2	12
R.W.	10	1/5	4	P.L.	9	1/5 to 1/2	12
R.D.	13	1/5 to 1/2	9	S.G.	9	1/5	12
E.T.	9	1/5 to 1/2	10	R.L.	9	1/25 to 1/10	12
V.W.	10	1/10	10	F.R.	11	1/5 to 1/2	12
D.B.	15	1/2	11	L.P.	10	1/10	13
L.B.	11	1/5	11	R.G.	10	1/5	13
C.H.	9	1/2	11	J.C.	10	1/5	13
L.R.	10	1/5	12	W.F.	9	1/5	13
E.C.	10	1/10	12	J.L.	16	1/25	13
R.B.	9	1/2	12	P.M.	9	1/25 to 1/10	13
P.M.R.	9	1/10	12	F.F.	9	1/10 to 1/5	14
P.M.	10	2	12	A.B.	9	1/10	14
P.G.	11	1/50	12	E.R.	9	1/10	14
B.H.	11	1/10	12	I.P.	10	1/5 to 1/2	15
C.R.	9	1/25	12				

son with the standard antitoxin appropriately diluted to the potency level of the test.

Table 1 shows the titers before and after the subcutaneous administration of 1 ml. (20 to 25 Lf.) of protamine-precipitated diphtheria toxoid in seven children, and of 2 ml. in two children. In Table 2 are given the data for 39 children who were originally Schick-positive and who were bled after receiving one dose of protamine toxoid. The lowest titer, following a single injection, is 1/1000 of a unit, a level indicative probably of a Schick-positive state. There were two children with this titer among the total of 46 subjects listed in Tables 1 and 2 who received one injection (5 per cent); one had been injected 2½ months and the other 3 months previously. In an examination of the 554 Schick-positive children referred to above, 4 per cent were found still to be positive after one injection. Approximately 78 per cent of the children listed in Tables 1 and 2 had a titer between 1/100 and ⅓ of a unit, 2½ to 18 months after the one injection of protamine toxoid, while 26 per cent had 1/10 of a unit or more. Between 11 and 18 months after one injection 30 per cent of the children had 1/10 of a unit or more.

In Table 3 are the corresponding data for the 93 children who received two injections of 1 ml. each of protamine-precipitated toxoid. Seventy-nine per cent of the 34 children examined (counting the two in Table 1) between 2½ and 3 months after the second injection produced 1/10 of a unit or more and 60 per cent produced ⅓ of a unit or more in that time. Between 9 and 15 months after immunization 90 per cent of the remaining 61 children had 1/10 of a unit or more and 58 per cent had ⅓ of a unit or more. It appears that the antitoxin level was as high in the children tested a year after the second injection as in those tested

3 months after the second injection.

#### DISCUSSION

The relative efficacy of protamine-precipitated diphtheria toxoid in eliciting the production of antitoxin can be estimated by comparing the titers obtained with those reported in the excellent data of Volk and Bunney<sup>4</sup> following the injection of either "fluid" or alum-precipitated toxoid (20 Lf. per dose). Such a comparison shows that, both with one and two doses, more children produce 1/10 of a unit or more when protamine toxoid is used than when alum or "fluid" toxoid is employed. It also seems that there is less tendency for the titer to fall after 12 months when the new product is employed. Of their subjects who, before immunization, had less than 1/1000 unit \* 48 per cent had 1/10 of a unit or more 4 months after two injections of alum toxoid, while after 12 months the figure was 37 per cent. Following one dose the corresponding values were 14 and 7 per cent. After three doses of "fluid" toxoid they were 20 and 21 per cent. Approximately two-thirds of the children were 6 to 10 years of age and the rest were in the preschool age group. The fact that our subjects were part of an urban population, while those of Volk and Bunney were from rural areas, may have contributed to the observed differences. However, since 80 per cent of our children were not over a year old when immunized, it seems unlikely that contacts with carriers could have played a significant part in the greater and more sustained antigenic response.

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\* Although the antitoxin titers of most of our subjects before immunization were not known, it is likely that they were no greater than 1/1000 of a unit. This is based on the fact that the initial titers of those children which were measured were, in 5 instances less than 1/2000, in three 1/2000 and in the remaining one between 1/1000 and 1/500 of a unit, and on the fact that these nine children were of the same age (9-12 months) as 80 per cent of all the children, and that they represented a random sample of these subjects.

## CONCLUSION

When measured  $2\frac{1}{2}$  to 18 months after a single subcutaneous injection of protamine-precipitated diphtheria toxoid (20 to 25 Lf.) the antitoxin content of the blood of young children is found to be between  $1/100$  and  $1/5$  of a unit in 78 per cent of the subjects. In 26 per cent the concentration was  $1/10$  of a unit or more. When two doses of toxoid were injected, 79 per cent of the children had  $1/10$  of a unit or more  $2\frac{1}{2}$  to 3 months after the second dose, and 60 per cent had  $1/5$  of a unit or more. Between 9 and 15 months after the second dose, 90 per cent had  $1/10$  of a unit or more, and 59 per cent had  $1/5$  of a unit or more. These results suggest a somewhat better response to protamine-precipitated than to alum-precipitated toxoid during the early months after immunization and a greater tendency for the antitoxin level to remain high in the 12 month period after immunization.

## REFERENCES

1. Ross, Victor. Preparation and Immunizing Properties of Protamine Diphtheria Toxoid. *Am. J. Dis. Child.*, 68:172-181, 1944.
2. Phair, John J. Diphtheria Immunization; The Interpretation of the Schick Test. *Am. J. Hyg.*, 36:283-293, 1942.
3. Glenny, A. T. and Llewellyn-Jones, Mona. Method of Testing Diphtheria Toxin and Antitoxin. *J. Path. & Bact.*, 34:143-156, 1931.
4. Volk, V. K., and Bunney, William E. Diphtheria Immunization with Fluid Toxoid and Alum-Precipitated Toxoid. *A. J. P. H.*, 32:690-699, 1942.

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We also wish to record our thanks to the staff of the Baby Health Stations of the New York Diet Kitchen Association for their assistance in this work.



# A Selective Medium for the Isolation of *Brucella suis*\*

S. ELBERG (MAJOR, SMC),† E. P. EDWARDS (2ND LT. CWS),  
AND R. W. SWANSON (LT. USNR)

*Special Projects Division, Chemical Warfare Service, Camp Detrick, Md.*

SEVERAL methods for isolating *Brucella* from heavily contaminated specimens have been described in the literature. The Royal Commission on Malta Fever<sup>1</sup> recommended the addition of anti-brucella serum to the specimen and subsequent culture of the agglutinated bacilli which were supposed to settle out on standing. Amoss and Poston<sup>2</sup> modified this method using crystal violet infusion agar, which had been recommended by Huddleson.<sup>3</sup> Gould and Huddleson altered the concentration of gentian violet,<sup>4</sup> and later the composition of the basic agar was radically improved.<sup>5</sup> The difficulty encountered by various workers in the isolation of *Brucella* from feces or other heavily contaminated material was partly caused by the resistance of *Escherichia coli* to the dyes, the length of time needed by the various species of *Brucella* to appear on the media and/or the spreading growth of such genera as *Proteus* and *Bacillus*.

The value of tyrothricin and sodium azide was therefore investigated in this connection and resulted in a relatively simple inhibitory medium which allowed the growth of *Brucella suis*.

## MATERIALS AND METHODS

**Strain**—The culture of *Br. suis* which was used predominantly in this

study was obtained from Dr. I. F. Huddleson and was numbered 1772. It was highly virulent for guinea pigs, requiring about five organisms to infect ten out of twenty injected guinea pigs. The culture was maintained on tryptose agar slants and transferred every 48 hours. Suspensions were prepared from these slants in a suspending fluid composed of 0.1 per cent Tryptose peptone and 0.5 per cent sodium chloride.<sup>6</sup>

**Media**—Tyrothricin (Sharpe and Dohme) and sodium azide (Eimer and Amend) in various concentrations were added to Difco Tryptose agar, to which had also been added 1 per cent glucose, 0.1 gamma thiamin hydrochloride per ml. medium and 10 p.p.m. iron as ferrous sulfate.<sup>7</sup> Since the alcoholic solution of tyrothricin used in this work contained 25 mg. of the antibiotic per ml., one ml. was added directly to 1,000 ml. of melted and cooled agar. The stock

## EXPLANATORY STATEMENT

A bacteriological medium, which may prove to be of value in isolating the causative organisms of the swine or porcine type of Brucellosis or Undulant fever from fecal samples or other heavily contaminated specimens, is described as the result of preliminary studies carried out at Camp Detrick on this disease. This report covers studies which are rather narrow in scope. However, it is felt that this medium may prove of value as a tool for other research workers. The medium contains, in addition to commonly used constituents, small amounts of Tyrothricin and Sodium Azide.

\* Studies conducted at Camp Detrick, Frederick, Md., from January, 1945, to August, 1945.

† Present address: Bacteriology Dept., University of California, Berkeley, Calif.

sodium azide solutions were so prepared that one ml. could be added to 1,000 ml. of agar to give the desired concentrations.

*Specimens* — Fecal suspensions from normal and infected guinea pigs were suspended in the tryptose saline diluent in concentrations of 1–2 per cent. For titrations of the media *Br. suis* was added to the fecal suspensions which were then filtered by pushing non-absorbent cotton plugs down through the suspension in a test tube. One-tenth ml. of this suspension was then spread over one agar plate of the test medium and the spreader used to inoculate a second plate without recharging. This method of dilution proved very satisfactory.

#### RESULTS

It was found that a medium composed of Difco Tryptose agar to which had been added 0.025 mg. tyrothricin and 0.0125 mg. sodium azide per ml. medium permitted minimal numbers of *Br. suis* to be cultivated from the suspensions of both artificially and naturally infected specimens. Satisfactory inhibition of the normal fecal flora occurred. The data are presented in Table 1.

The isolation of *Br. suis* on this medium from the feces of infected animals depends upon the ability of the medium to prevent the overgrowth of *Brucella* by the accompanying Gram-positive and negative contaminants. The action of tyrothricin and sodium azide does not result in complete inhibition of the associated forms. The medium therefore requires the usual careful examination of colonies from the 48th hour onward. Suspicious colonies are transplanted to Tryptose agar and the identification is continued. The use of a second agar plate which serves to dilute the inoculum considerably increases the number of isolations of *Brucella*.

The reproducibility of this medium is an advantage in which media containing the usual bacteriostatic dyes do not share. Titration of the strains of *Brucella* has revealed fine gradations in susceptibility to the action of these dyes and hence each batch of medium must be carefully standardized. While this may prove to be the case also with the medium presented in this report, to date no such variations in susceptibility of *Brucella* strains to the action of tyrothricin and sodium azide have been observed.

TABLE 1

*Isolation of Br. suis on Medium Containing Tyrothricin and Sodium Azide*

Concentration of Tyrothricin (mg. per ml. Medium)	Concentration of Sodium Azide (mg. per ml. Medium)	Growth of <i>Br. suis</i> (Pure Culture)	Isolation of <i>Br. suis</i> from Feces	Overgrowth by Fecal Flora
0.25	0	—	—	++
0.125	0	—	—	++
0.05	0	—	—	++
0.025	0	++	—	++
0.005	0	++	—	++
0.0025	0	++	—	++
0.00025	0	++	—	++
0.025	0.1	—	—	—
0.025	0.05	—	—	—
0.025	0.025	—	—	—
0.025	0.0125	+	+	+
0.025	0.0100	+	+	+

The sensitivity of the medium has been demonstrated by the isolation of *Br. suis* from feces of experimentally infected guinea pigs. However, the excretion of *Brucella* is irregular and no conclusions on the pathogenesis of *Brucella* infection in animals are warranted at this time. Further studies on the epidemiology and pathogenesis of this infection are considered possible with this medium.

#### SUMMARY

1. A medium composed of Difco Tryptose agar to which tyrothricin and sodium azide were added has proved suitable for the direct isolation of *Br. suis* from the feces of experimentally infected animals.

2. It was suggested that this medium may assist in further studies of the pathogenesis and epidemiology of Brucellosis.

#### REFERENCES

1. Horrocks, W. On the Duration of Life of *M. melitensis* outside the Human Body. *Royal Commission on Mediterranean Fever Reports*, 1904.
2. Amoss, H. L., and Poston, M. A. Isolation of the *Brucella* Organisms from the Stools. *J.A.M.A.*, 93:170, 1929.
3. Huddleson, I. F., Hasley, D. E., and Torrey, J. P. Further Studies on the Isolation and Cultivation of *Bact. abortus*. *J. Infect. Dis.*, 40:352 (1927).
4. Gould, S. E., and Huddleson, I. F. Diagnostic Methods in Undulant Fever. *J.A.M.A.*, 109:1971, 1937.
5. Huddleson, I. F. *Brucellosis in Man and Animals*. Commonwealth Fund, 1939.
6. Huddleson, I. F. *W.R.S. Report*, 1944.
7. Mills, R., and McCullough, W. Personal communication, 1945.

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## Research Grants of the Nutrition Foundation

At a recent meeting of its Board of Trustees, the Nutrition Foundation authorized research grants totaling \$176,000. Fourteen were new grants, nine renewals of previous grants. The largest grants were two of \$30,000 each to the Children's Fund of Michigan and the Child Research Council of Denver, respectively, for a survey of the nutritional requirements of mothers during the reproductive cycle, and for nutrition studies as an integral part of continuous studies of the same individuals from birth to maturity. Among other institutions receiving grants were Mt. Sinai Hospital, New York City; the Florida State Department of Health and the following universities: Harvard University School of Dental Medicine, the University of California Medical School, Alabama Polytechnic Institute, California Institute of Technology,

Duke University, State College of Washington, Universities of Cincinnati, Minnesota, Toronto, and Wisconsin.

The Scientific Director of the Foundation, Charles G. King, Ph.D., reported that with these grants, 12 studies in the field of human nutrient requirements would be under way, 43 relating to origins, functions, and the measurement of individual nutrients, 8 to maternal and infant nutrition, 25 to nutrition and public health problems, and 6 projects relating to educational and professional training.

In summarizing its history, the President, George A. Sloan, reported that since 1942 the food industry had contributed \$2,300,000 for the support of the Foundation. Of this, \$1,225,000 had been allocated to 49 universities in the United States and Canada, covering 125 research grants.

# DDT in the General Health Program\*

HARRY G. HANSON

*Sanitary Engineer, U. S. Public Health Service; Executive Officer, Malaria Control in War Areas, Atlanta, Ga.*

IT is both coincidence and good fortune that an insecticide as promising as DDT is available to the public at a time when insect-borne diseases are again becoming of much greater importance. The war just concluded has again vividly demonstrated that danger lurks where the paths of man and insect cross. While the etiology and indicated control of many insect-borne diseases have been known for a long time, their successful control through the natural evolution of the required techniques, equipment, and materials has been a slow process. As with many other developments essential to human welfare, stimulation born of destruction was necessary to forge earlier the link between knowledge and its application.

DDT is more than just another insecticide; it is a tool which properly utilized makes possible new and significant accomplishments. Remarkable is the fact that it may be used with relative safety in a variety of forms, against a wide range of insects, with long lasting residual effect. This potent chemical, coupled with good sanitary practices, is capable of creating levels of freedom from insects much higher than those previously known. It presents a challenge and a responsibility therefore to health agencies.

What, then, is the rôle of health departments in programs involving the use of DDT? As a prerequisite they must be informed regarding the appro-

priate public health uses of the material, and their personnel trained in its application. With this foundation they must plan, develop, and accept the responsibility for assuring the conduct of specific public health programs for which DDT is indicated. Through the proper discharge of these functions a great contribution to public health can be made. The public is looking to health departments for leadership and guidance in the control of insects of sanitary importance; lacking this they will either do nothing or proceed through uncoördinated individual action to solve health problems requiring co-ordinated community action.

The insects of public health importance in continental United States against which DDT is presently known to be effective may be divided into (1) those known to be significantly incriminated in transmission of disease, and (2) those not definitely incriminated but considered detrimental to human comfort and enjoyment, or suspected of being related to disease transmission. Certain species of mosquitoes, fleas, ticks, and lice are among the first group; species of the same insects and others such as roaches, bedbugs, moths, silverfish, and beetles are among the latter. Most of this latter group are considered of indirect if not direct public health importance. Flies will be considered separately. In the case of either group of insects, DDT has its appropriate niche and should not be considered as a substitute for all other means of control. Rather it should be considered

\* Presented before the Southern Branch A.P.H.A. in Cincinnati, Ohio, November 15, 1945.

as another effective tool to be employed with appropriate emphasis in conjunction with those already developed or yet to be developed. It definitely should not be substituted for good sanitation and cleanliness.

The principal public health program presently directed against mosquitoes is that for malaria control. In urban areas the tried and proved drainage and larvicidal techniques continue to receive major emphasis. In rural areas, however, where these approaches are economically not feasible, DDT residual sprays are of greatest promise. During the past season approximately 400,000 rural homes in southern areas of highest endemicity received such treatment. Sprays in emulsion form were applied to the interior surfaces of the houses and privies in sufficient quantity to remain lethal for approximately three months to mosquitoes resting for 30 to 60 minutes on the treated surfaces.

Final results of this program, in terms of actual reduction in incidence of the disease, are not yet available and may not be until the end of another season. Complete epidemiological investigations designed to measure reduction in malaria incidence have been in progress in selected control areas since early 1945. Field entomological observations,<sup>1</sup> supplemented by laboratory determination of source of blood meal and infectivity rates in female anopheline mosquitoes, are nevertheless highly encouraging. In less than 3 per cent of the treated homes inspected were vectors found on afternoon inspection, and then in only small numbers. Of the vectors collected on treated premises only one-tenth as many as collected on untreated premises had taken human blood meals. These data conservatively reflect the significance of DDT residual sprays in reducing the mathematical chances for transmission of malaria. The application of residual sprays to

control other mosquito-borne diseases depends primarily on the habits of the particular mosquito with respect to the habits of man. Of growing concern as mosquito-borne diseases are the continental forms of encephalitis and the exotic and highly fatal forms such as Japanese B encephalitis.<sup>2</sup> In this connection, species of mosquitoes hitherto considered only of nuisance importance have become of definite public health significance.

As a mosquito larvicide DDT has several advantages. It may be applied in liquid (solution, emulsion, or suspension), dust, or aerosol form; it is effective against all stages of larvae (except possibly in the dust form); applied either from the air or ground, it is more economical than Paris green or fuel oils. As generally applied to natural bodies of water, DDT mosquito larvicides do not appear to exert any significant residual effect. This is probably due to inactivation of the material by bottom muds.<sup>3</sup> Against mosquitoes which breed in domestic habitats, such as artificial containers, the residual properties of DDT larvicides are exerted significantly and may be very advantageous in the control of dengue fever, yellow fever, and filariasis. As an aerosol (finely dispersed form) it may be applied also from the air or ground to combat adult mosquitoes present in a community either by reason of local production or migration. The greatest potential danger now apparent attending the widespread application of DDT in nature is its detrimental effect on useful plant and animal life. Investigations to determine the dosages and techniques which may be employed safely are now being prosecuted by several agencies. On the basis of information available at present it is believed that DDT larvicides properly applied may be used with reasonable safety in most cases, making possible more effective

control of all mosquitoes within economic reach of more communities.<sup>4</sup>

According to morbidity reports, murine typhus fever in the United States is increasing faster than any other endemic insect-borne disease. In an effort to check and turn downward the upward trend in incidence of this disease, rat proofing and eradication measures in typhus, in important areas of ten southern states, are now being supplemented by DDT dusting. In rural areas the dusting is employed singly or in combination with rat control measures, principally poisoning. The attack with DDT, generally inaugurated within the past few months, is against the rat flea principally, although significant kills of rat mites and lice are obtained coincidentally. Results of this effort in terms of reduction in incidence of murine typhus may require one or more years for epidemiological evaluation through studies already under way. The effectiveness of 10 per cent dusts applied to rat runs and burrows has been strikingly demonstrated. With proper application of moderate amounts of dust, reduction in number of fleas per rat generally exceeds 90 per cent, and the resulting flea index is generally less than one per rat.<sup>4</sup> A single treatment exerts satisfactory residual effect for three to four months. While the public health importance of fleas on household pets such as cats and dogs remains to be determined, it is known that light applications of 10 per cent DDT dusts to these animals or their habitats are highly effective. Since cats may become sick from DDT licked from their bodies, treatment of their habitats is suggested. The efficacy of DDT in controlling louse-borne or epidemic typhus by application of 10 per cent dusts to men and/or their clothing is convincingly exemplified by the experience . . . of the Army in control of typhus fever in Naples during the war.

Most of the ticks considered to be of public health importance are susceptible to DDT. On domestic animals control by means of dusts is practical. Successful suppression in nature over large areas may be possible with dusts, mists, or aerosols, but remains to be demonstrated. As additional insects are incriminated in disease transmission, the specific applicability of DDT may be explored as necessary. In most cases where the insect is susceptible to DDT, suppression techniques can be developed.

In the field of household insects pests not importantly related to disease, much has been accomplished toward greater freedom from this form of vermin. Properly applied to the habitats of roaches, bedbugs, ants, silverfish, moths, and some forms of beetles, sprays or 10 per cent dusts are effective and are less poisonous to man and household pets than ingredients common to many insect powders.<sup>5</sup> Since DDT residual sprays or dusts are generally slow in killing action, it may be desirable to use for greater initial kill a quick knockdown spray such as one containing pyrethrum. Bedbugs are readily controlled by application of DDT sprays to mattresses, beds, upholstered furniture, and adjacent hiding places. All common forms of human lice are successfully controlled by application of 10 per cent dusts to the affected portions of the body and/or wearing apparel. In the control of both bedbugs and lice in public schools, treatment of pupils may be supplemented by measures in the home to achieve completely satisfactory results.

The ubiquitous house fly has long been in a controversial position in public health. Reports of its incrimination in the occurrence of enteric and other infections are not well supported by good epidemiological evidence establishing it as a significant agent in transmission. The circumstantial evidence

in many cases is strong, and sound investigations to determine the importance of house and other flies in the transmission, especially of enteric infections and poliomyelitis, should be conducted. Full scale studies to determine the effect of fly control using DDT on diarrheal disease incidence are already under way. Fortunately the house fly is highly susceptible to DDT treatment. Once its breeding places are established by careful entomological survey, good sanitation and DDT can effect reductions in housefly populations approaching eradication. It is now possible for homes as well as restaurants, dairies, hospitals, markets, and other public places of health importance to be substantially free of house flies.

Essentially a new level of sanitary environment is now available. No longer need any organized community tolerate insect populations inimical to public health and comfort. The techniques, equipment, and materials have been sufficiently perfected to permit highly satisfactory control of the commonly encountered insect pests on a community-wide basis. Further, the cost is well within the economic resources of most communities.

While it is probably true that individuals can control the vermin on their own premises if they desire, it is doubtful that successful community programs can be prosecuted without greater concert of action than is generally possible through this approach. It remains therefore for appropriately constituted local agencies to provide vigorous leadership in planning, promoting, and marshalling the forces necessary to conduct successful community-wide programs. Much support can be rallied now while public interest is intense, to inaugurate with DDT public health activities of lasting value.

#### REFERENCES

1. Bradley, G. H., Senior Entomologist (R) and Fritz, R. F., S.A. Sanitarian (R). Entomological Evaluation of Residual Spraying for Malaria Control, Malaria Control in War Areas, U. S. Public Health Service, Atlanta, Ga. Presented before National Malaria Society 1945 Sessions.
2. Hammon, W.McD., M.D., Dr.P.H., and Reeves, W. C., Ph.D. Recent Advances in the Epidemiology of the Arthropod-borne Virus Encephalitides. *A J.P.H.*, 35, 10 (Oct.), 1945.
3. Upholt, William D., Assistant Sanitarian (R), U. S. Public Health Service, Carter Memorial Laboratory. Inactivation of DDT by Bottom Muds. Savannah, Ga. (Unpublished), 1946.
4. Simmons, S. W., *et al.*, unpublished papers of U. S. Public Health Service, Carter Memorial Laboratory, Savannah, Ga., 1946.
5. *DDT for Control of Household Pests*. U. S. Public Health Service, Office of Malaria Control in War Areas, Atlanta, Ga., 1945.

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## TAKING STOCK OF DDT

ONE of the fascinating things about science is its unexpectedness—the way in which one discovery leads to another or, perhaps to a broad generalization which may open a hundred new possibilities. The road at a given moment crosses a divide and opens a new world. Raymond Fosdick's current report as President of the Rockefeller Foundation<sup>1</sup> is a document which everyone should read. In it he points out how, not only the physicists who were conducting the purest of pure research on the structure of the atom but—before them—Einstein and Willard Gibbs laid the foundation for the destruction of Hiroshima.

DDT is the atomic bomb of the insect world; but it is fortunately much more specific in its action. It too, however, has possibilities for evil as well as for what seems to the human race good. Its potentialities have been admirably analyzed for us in the Special Review Article of this issue of the *Journal*, by Dr. F. C. Bishopp. Mr. H. G. Hanson of the U. S. Public Health Service outlines, in another article,<sup>2</sup> the methods used and the results attained with DDT in actual public health practice.

Dr. Bishopp points out the extraordinary power of this substance in destroying some of our most deadly insect enemies. An insecticide which will destroy mosquito larvae in a concentration of 1 part in 100,000,000 parts of water and which—when sprayed on the wall of a building—will kill mosquitoes or flies which light upon it two months later, is indeed a marvel. It is effective against mosquitoes, flies of many species, fleas, lice, bedbugs and ticks; but, unfortunately, not against most mites. The sewage works operator has now, at last, a weapon against the *Psychoda* flies which constitute such a nuisance in trickling-filter plants. How the contact with this substance actually kills an insect still remains a challenging biologic mystery.

On the other side of the ledger Dr. Bishopp reviews the possible dangers which may be involved in the wide and indiscriminate use of this new insecticide. DDT is definitely toxic to man and the domestic animals, although less so than nicotine and certain arsenicals commonly used for similar purposes. It must not be allowed to get into foods or to be accidentally ingested, and must not be applied



to the skin in an oil solution. Therefore, it is important that the suggestions of the Insecticide Division of the Department of Agriculture with regard to standardization and labelling be enforced; and that DDT sprays be not used on cabbage or similar vegetables after the heads have formed, or on crops to be fed to stock, until more is known of their limits of tolerance.

The uses of DDT in public health will not, in general, be such as to threaten the wide disturbances of the balance of nature which have been anticipated by some timid souls. But the application of this substance to extensive areas of swamp land for mosquito control and—still more—its indiscriminate use in the control of agricultural pests, might have more far-reaching effects. The question whether the honey-bee and other beneficial insects may be destroyed is a pertinent one; since the killing of honey-bees would be fatal to the plants they pollinate. It appears, however, that DDT may be less detrimental to the honey-bee than lead arsenate. Possible effects on bird and fish life must also be considered. Dr. Bishopp reports that application by airplane of 5 pounds of DDT per acre of forest land while birds are nesting will cause great destruction; but that 2 pounds per acre or less will not. Fish may be killed by concentrations above  $\frac{1}{2}$  pound per acre; but one-tenth of a pound will destroy anopheline larvae.

We need more knowledge on these and many other points. All in all, however, it seems certain that it will be possible to work out procedures by which the enormous potential advantages of this insecticide can be gained without any serious compensating hazards. Already, the use of DDT has worked a scientific miracle in the control of typhus fever. There can be no doubt, in the light of history, that Central and Eastern Europe would have been the scene of one of the great typhus epidemics during the past winter if we had not had DDT. The fact that we have now, for the first time, an effective method of controlling mosquitoes and flies and fleas in dwellings and food stores and stables should be of incalculable significance in the control of malaria and the intestinal diseases.

DDT stands—with penicillin—as one of the two greatest contributions to public health science which have been made in the last decade.

#### REFERENCE

1. The Rockefeller Foundation, A Review for 1945.
2. Hanson, Harry G. DDT in the General Health Program. *A.J.P.H.*, this issue, p. 653.

### THE LASKER AWARDS

THE chief causes of death and of ill-health in our time are the diseases and disabilities which occur most conspicuously in the middle and later years of life; and, with the progressive aging of the population, this will be more and more true in the future.

The crude death rate from heart diseases and cancer has doubled in the United States during the past thirty years. Mortality from cardiovascular and renal disease, *standardized by age*, has steadily fallen in the same period<sup>1</sup>: by over 60 per cent for the white population at ages under 35; by over 30 per cent at ages between 35 and 54; by over 20 per cent at ages between 55 and 74. Yet, as a result of the increasing longevity of the population at risk, diseases of the heart and cancer caused over 600,000 deaths in 1943, about 43 per cent of all deaths from all causes.

The origin of these diseases is, in general, unknown or obscurely known. For their treatment, specific drugs, hospital facilities, and an adequate management program are lacking. Unchecked, they lead to immense suffering and finally to total disability, with vast social and economic consequences.

Not much more than alleviation of pain can be offered at the present time to the sufferers from these diseases—of the heart and arteries, of cancer, of rheumatism and arthritis, and of others high on the mortality and morbidity lists. Even palliative measures are available only on a pitifully inadequate scale. Medical care too little and too late, if not altogether absent, is the common lot of a large proportion of our people.

To stimulate advance in this important field the Albert and Mary Lasker Foundation has offered—through the medium of the American Public Health Association—a series of annual awards for outstanding achievements by individuals or by health or welfare agencies in research and in the administrative application of research, with special reference to those diseases which are the major causes of death. "Included in this purpose are the prevention of these diseases, their treatment, and their most effective care. Particularly it is desired to increase the information possessed by the public health professions about these most frequent causes of death, to inform the general public of new methods to increase the health and satisfaction of those in the later years of life, and, wherever possible, to shorten the time between the discovery and application of useful knowledge."

This new project has been briefly discussed in the Report of the Chairman of the Executive Board to the Governing Council, published in the May issue of this *Journal*. The Lasker Foundation will make available to the Association for the purposes outlined above four annual gifts of \$1,000 each and a commemorative statuette for each recipient. For an especially important contribution, on a level with that of the discovery of penicillin, the Lasker Foundation proposes an additional award of \$2,500. To carry out this project, the Executive Board has appointed the following Committee on Awards:

George Baehr, M.D., *Chairman*  
Thomas Francis, M.D.  
Hugh R. Leavell, M.D.  
Robert F. Loeb, M.D.  
Karl F. Meyer, Ph.D.

Thomas Parran, M.D.  
Alfred N. Richards, M.D.  
James S. Simmons, M.D.  
Ernest L. Stebbins, M.D.

The Committee has full authority to determine the particular fields in which awards will be given in any year. It is empowered to withhold awards entirely, if no research projects in any year in the chosen area are, in its opinion, worthy of recognition. The areas of interest in which the awards for 1946 will be made are now being defined by the committee and will shortly be announced. It is understood that the contributions of health and welfare agencies, and of individuals, will be equally considered in the general program. Research related to clinical services or to the distribution of clinical services to the public will receive primary recognition, but administrative achievement and outstanding applications of facts already known will be honored as well.

The establishment of these awards—and the assumption of responsibility for their administration by the American Public Health Association—may be considered a significant landmark in the evolution of our conceptions of public health. No longer is the health officer concerned solely with problems of sanitation and quarantine. His function is to promote the health of the community which he

represents. If he is alive to his responsibilities and his opportunities, he will devote his major energies to the major health problems of those communities. In most areas of the United States, those problems are no longer smallpox and typhoid fever and malaria; but heart disease and cancer and mental disease. The classical problems of sanitation and communicable disease control must not be forgotten; and the lack of basic facilities for dealing with them must be provided in neglected rural areas, as pointed out by the Emerson Committee. But the health officials of the more advanced communities need not wait idly for this end to be attained.

It is, in large measure, because of the changing scope of public health that the American Public Health Association has made clear its belief that a program of medical care designed to reach all of the people is essential. It has done more than that. In affirming its conviction that an overall medical care program can be realized within ten years, it has proposed an immediate and simultaneous attack on five main fronts. These are (1) development of administrative organization to provide services; (2) facilities for distribution of costs; (3) advancing the training of personnel; (4) promoting construction of facilities; and (5) the improvement of knowledge. Each of these objectives is of fundamental importance to the whole, and the stimulation—within and without the public health profession—of the forward movement of each part in the total program must be accomplished in diverse ways. Significant advances toward any one of them can be stimulated by the Lasker Awards. The purpose of these awards is to increase knowledge, and to speed the application of practices by which human suffering can be lessened, periods of illnesses shortened, and disability minimized. These are, in essence, the goals of the Association's program.

#### REFERENCE

1. *Stat. Bull.*, Metropolitan Life Insurance Co., March, 1946.

## WHAT THE HEALTH DEPARTMENT NURSES ARE DOING

THE N.O.P.H.N. has recently issued a valuable statistical review of the work actually performed in 1944 by the nursing staffs of 96 city and 96 county health departments, selected to represent services of varying sizes in various areas of the United States.<sup>1</sup> Data were obtained as to cases carried and visits made, subdivided under twelve distinct special types of service, as follows: infant health, preschool health, school health, adult health, tuberculosis, antepartum, postpartum, acute communicable, venereal disease, crippled children, non-communicable, and delivery.

Of the county health departments, over 90 per cent reported some nursing service in eight of the twelve fields listed. In care of crippled children, the proportion fell to 85 per cent; in non-communicable disease and adult health to 59 and 58 per cent; in delivery service to 25 per cent. The scope of the municipal departments was somewhat narrower. Infant health work was carried by more than 90 per cent of the departments; preschool health, school health, tuberculosis, and acute communicable disease by between 80 and 90 per cent; antepartum and postpartum care by between 70 and 80 per cent; and venereal disease by 67 per cent. The proportion for non-communicable disease fell to 55 per cent; for

crippled children to 52 per cent; for adult health to 48 per cent; and for delivery service to 7 per cent.

Approached from another standpoint, it is of interest to note that 7 per cent of the county departments, reporting fully, offered all the twelve types of service listed and 27 per cent of the county and 14 per cent of the city departments offered eleven out of the twelve (delivery service being presumably the one omitted). Eight, nine, or ten types of service were provided by 67 per cent of the county and 51 per cent of the city departments; while less than eight services were offered by 34 per cent of the city departments, reporting fully.

From the standpoint of visits in connection with each of the twelve problems listed, in proportion to total nursing visits, the difference between median city and county departments is less marked. Infant health stands highest in both types of area (16 per cent of total visits in both counties and cities for the median of those departments reporting fully). Preschool stands next (13 and 12 per cent); school next (12 and 14 per cent); and tuberculosis next (9 and 11 per cent). Venereal disease stands lower (5 and 4 per cent); with adult health only 2 and 3 per cent, respectively; crippled children only 2 and 1 per cent. In the other four categories there are significant differences between urban and rural areas. Antepartum care (7 per cent for the median county, 4 per cent for the city) and postpartum care (6 per cent for the median county and 3 per cent for the city) receive more attention in the rural areas. On the other hand, acute communicable diseases receive 8 per cent of all visits in the median county and 13 per cent in the median city; while non-communicable diseases receive 6 per cent of county and 10 per cent of city visits.

There are, however, extremely wide deviations from these median values in individual communities. One city devoted 70 per cent of its visits to infant care. One city and one county reported 58-60 per cent of all visits to school children. One city devoted 56 per cent of its nursing visits, and one county, 92 per cent of its visits to tuberculosis. One city devoted 77 per cent of its nursing visits, and one county 66 per cent of its nursing visits, to communicable disease (presumably as a result of local epidemics). One city devoted 81 per cent of its nursing visits, and one county, 72 per cent of its nursing visits to venereal diseases.

On the whole, it seems to us that the general picture presented by these figures is an encouraging one. The generally wide spread of services is surprisingly satisfactory; and the quantitative apportionment of visits to particular services appears rational, so far as the median health department is concerned. The only areas not covered by at least 90 per cent of the counties and by at least 60 per cent of the cities are adult health, crippled children, non-communicable diseases, and delivery service; and, in the cities, services in these fields are probably provided by voluntary public health nursing organizations.

The service offered by the city health departments is less diversified than that in the counties; except in communicable disease and in adult health. It includes much less antepartum and postpartum care than the counties—a fact again, no doubt, related to other available community services.

There are, however, occasional fantastic extremes reported. An epidemic of communicable diseases may make exceptional demands on a given community in a given year. But there seems no legitimate reason for a health department nursing staff to devote 70 per cent of its nursing visits to infant care, or 60 per cent to school health, or 90 per cent to tuberculosis, or 80 per cent to gonorrhea

and syphilis. What rational explanation can there be for the fact that eighteen county health departments devoted less than 1 per cent of their total home visits to venereal disease, while three departments assigned more than 50 per cent of their service to this field? Or for the fact that the proportion of home visits to acute communicable disease was less than 2 per cent in nine counties and over 20 per cent in fifteen counties? Or—among the cities—that eight departments assigned less than 2 per cent of nursing visits to tuberculosis while the corresponding proportion was over 40 per cent in four departments? This analysis, in its present form, should prove a valuable yardstick by which the health officer and the director of nursing can evaluate the balance of their local department programs.

Such studies could in the future be greatly strengthened by broadening their base to include two other factors which materially influence any interpretation of the results. It would be helpful to know how much of the total nurses' time is devoted to home visits. Where a shortage of nurses exists (as it does, and will continue to exist in most areas) it may often be advisable to utilize counselling at clinics and conferences in place of home visiting in appropriate cases. More important is the need for information in regard to the work of voluntary nursing agencies and of departments of education in the communities where official health departments are studied. It may be that in a given community school nursing is the responsibility of the board of education or that maternal and infant care or tuberculosis nursing is done by the V.N.A.

It is clear that public health nursing is a broad community function. The important thing is not what the health department or the V.N.A. does, but what service the people of the city or county actually receive. Such studies as that here reviewed should offer an impetus to coöperative planning by all the agencies concerned. Attempts at coördination have succeeded in some areas; experiments which for a time seemed promising in other areas, have failed. Yet, we should never abandon the effort to develop machinery which will—under the conditions which obtain in each community—approximate the ultimate ideal of a single comprehensive generalized public health nursing service for the entire population.

#### REFERENCE

1. Wiesner, D. E., and Murphy, M. W. *Visits and Cases in Nursing Services of County and City Health Departments*, N.O.P.H.N., 1790 Broadway, New York 19, N. Y.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**The Psychology of Women. Vol. 2, Motherhood—By Helene Deutsch, M.D. New York: Grune & Stratton, 1945. 506 pp. Price, \$5.00.**

The psychology of women's emotional and sexual functioning has generally been conceded to present a greater complexity of problems than that of men, probably largely due to the facts, (1) that differences in the anatomical structure between the sexes tend to make a later or at least more variable development of awareness of the sexual organs in the girl than in the boy, and (2) that woman's sexual functioning is biologically so much more involved in procreation than is the case with man. In the past, also, most of the studies of women's emotional development have been made by men, and interpretations may have been somewhat shaped by this.

The present volume, which is the second of a two volume study on the psychology of women by Dr. Deutsch, fills then a very special need: it is a comprehensive, detailed, and very rich study of the psychological aspects of motherhood, by an experienced, observant, and sympathetic woman. The approach is largely clinical and is everywhere colored by the author's work as a psychoanalyst. While this enormously deepens and enlarges the scope of the material presented in a way which is provocative and stimulating to many groups of readers (certainly all those who are concerned with a clinical approach to human behavior), it is not quite clear for what group of readers the book is primarily intended. Consequently one misses a certain clarity of focusing and organization. This is,

however, a minor defect in a valuable presentation. It is a presentation which possibly foreshadows and paves the way for more precise understanding of emotional-sexual functioning which may be achieved through the combined efforts of gynecologists and psychiatrists—two groups who are as yet much too far apart.

PHYLLIS GREENACRE

**Microbes of Merit—By Otto Rahn. Lancaster, Pa.: Jacques Cattell Press, 1945. 274 pp. Price, \$4.00.**

This is a book that will clearly show the layman how man's existence on earth is dependent upon microbes. More than that, the author credits these organisms with their important part in sewage disposal, water purification, manufacture of foods, useful articles, and drugs. Glorifying the microbe, seems to be the particular merit of this book, since it acquaints the layman with an aspect of microbiology, not as a rule emphasized or appreciated. At times the reader may grow weary of terms and cycles unfamiliar to him, but for those who wish to take a glimpse of this field it is recommended.

GRETta W. STEWART

**What People Are—By Clark W. Heath. Cambridge: Harvard University Press, 1945. 141 pp. Price, \$2.00.**

When so much is being written about the pathological aspects of life, it is refreshing and encouraging to find a book which presents the variations and values of the normal factors of life, "The Nature of the Normal Human Being." Clark W. Heath, in this study of normal young men, has put together

much of the collective data and reports which he and his colleagues at Harvard University have collected in their studies of the apparently normal Harvard student.

The great promise in this work is that it is supported by the Grant Study, an institution established in 1938 at Harvard University, for the study of normal persons. This insures that the investigations of the normal young man will be continuous, reaching into future generations, and establishing correlations between present and future data.

The approach to this study is clinical. The characteristics of normal young men are described in relation to their adjustments to career choice, athletic participation, religion, and sex. Their socio-economical backgrounds are studied in detail. Morphological measurements showing body proportions and variations from the masculine component are recorded and related to other findings. How the body responds to fatigue, to physiological testings, and how these responses varied and were related to other factors, are given much attention. Medical considerations, mental measurements, and studies of such factors as delay in physical maturation, contrasting attitudes, frustrations, inferiority feelings, and affections are all painstakingly studied, recorded, and statistically examined for correlations. It is pointed out that the extent of positive correlations are limited by the complexity of human personality and the present lack of technical knowledge. However, the careful study of each personality in all the categories or "disciplines" does offer a basis for intelligent guidance and directs interest in future studies.

To most readers interested in young men, many sections of this study will be interesting and informing. Those interested also in techniques of measurements will find many other pages of value.

GEORGE T. BLYDENBURGH

**Burma Surgeon Returns —** By Gordon S. Seagrave, M.D. New York: Norton, 1946. 268 pp. Price, \$3.00.

Those who enjoyed *Burma Surgeon* will find pleasure in this second volume of the experiences of Dr. Seagrave through the battle of Burma and Seagrave's assignment to a medical unit to serve the Chinese and American forces. He took a remarkable group of Burmese nurses through the worst of it and finally returned to his mission hospital. It is a moving story, highly recommended to the public health worker burdened with what may seem to be the world's worst woes. It captures the spirit of medical missions at its best.

REGINALD M. ATWATER

**Here's How It's Done —** By Florence B. Widutis, assisted by Sally Smith Kahn. New York: The Post-war Information Exchange, Inc., assisted by The Carnegie Endowment for International Peace, 1945. 74 pp., illus. Price, \$1.00.

This guide is offered to individual citizens or groups of citizens who wish to arouse their communities to action on issues of local, state, national, or even international importance. "You have a conviction about a social problem, a political issue or a community situation which you want to do something about. You want to get action but you don't know where to begin."

The handbook deals with study groups, speakers' bureaus, film forums, newspapers, opinion polls, paid advertising, inter-group coöperation, and many more ways of going about the task of bringing about change. General advice is supplemented by examples of the way all of these things have been done by a wide variety of movements and big and little agencies. Material for the pamphlet is drawn from replies to a questionnaire—500 replies having been received from community groups and 350 from national

agencies. At the end, a directory of organizations tells where to go for materials and speakers in the field of popular education concerning domestic and international problems.

Since the pamphlet is brief (containing in addition to the directory 56 pages of text broken down into 15 chapters), and both scope and purpose are broad, its advice is of necessity general and familiar to public health educators. MARY SWAIN ROUTZAHN

**Nutrition and Chemical Growth in Childhood. Vol. II—By Icie G. Macy. Springfield, Ill.: Thomas, 1946. 1,027 pp. Price, \$10.00.**

This is the second volume reporting in detail the extensive studies that have been carried on by the staff of the Research Laboratory, Children's Fund of Michigan, during the last two decades. Volume I, published in 1942, presented the conditions under which the studies were conducted and the investigative procedures used. Volume II was originally planned to consider the interpretation of the collected data, but "it became apparent that a single tome could not include all of the data and a full interpretation of the original results." Hence Volume II presents "all the facts" and a forthcoming volume will deal with interpretation.

Extensive data — chemical, nutritional, clinical, social, roentgenologic, etc.—are presented for each of twenty-one children, and all the data for one child are conveniently arranged in a separate chapter. In fact, each chapter bears the title of the child and is prepared along the lines of an extensive medical history supported with an abundance of data.

This volume also includes supplementary data on nitrogen, calcium, and phosphorus metabolism of preschool boys and girls obtained at the University of Illinois by Dr. Julia Outhouse Holmes and her collaborators, and some

interesting comparative data on a few abnormal children studied at the Children's Hospital of Michigan.

One of the outstanding features of this book is the large number of roentgenograms, all of high quality and well reproduced. Without doubt this volume presents the finest and most extensive collection of data on nutrition and chemical growth in childhood that exists. The reviewer has only praise for this excellent work and the hope that it will be continued, particularly the study of the same children until they are all well into adulthood.

FREDRICK J. STARE

**Precis des Maladies Infectieuses Serie de Publications de la Societe des Nations III Hygiene 1945 III. 1. —By Professeurs C. Ionescu-Mihaesti et M. Ciuca. Geneva, Switzerland: Societe des Nations, 1945. 337 pp. Price, Frs. Suisses 5.**

This cloth bound pocket manual of 337 pages is a valuable wartime product of the indefatigable secretariat of the Health Section of the League of Nations. The text is based on the clinical and bacteriological experience of the personnel of the Cantacuzene Institute of Bucharest and particularly of Professors Ionescu-Mihaesti and Ciuca.

The first 180 pages present a summary of each of 87 communicable diseases and infestations, such as are familiar to epidemiologists and health officers around the world. A title unfamiliar in this country as a communicable disease is acute peritonitis, due to any one of innumerable aerobic and anaerobic human pathogens.

In the uniform presentation of each disease there is no reference to the period of communicability, treatment by specific measures is briefly dealt with, and control measures do not include pasteurization of milk or many of the common administrative pro-



cedures usually required under the sanitary laws of our states and cities. In other respects these thumbnail descriptions of the notifiable diseases familiar to us are approximately interchangeable with those of the 6th Edition of the *Report on the Control of Communicable Diseases* of the A.P.H.A.

The second part of the manual (113 pp.) deals with general and special applications of immunology in prevention, diagnosis, and treatment. The use of bacteriophage, transfusions, sulfa drugs, and of antibiotics is included in this section.

The third part (114 pp.) deals with the collection and examination of specimens of body fluids or tissues, insects, water, etc., for diagnostic purposes, the last twenty pages being devoted to an alphabetic index of contents, one of authors, and a page of 19 references.

This handy volume will doubtless serve admirably the needs of the hard driven physician and health official of Europe in its period of post-war chaos, epidemics, administrative confusion, and shortage of printed material in the medical sciences. According to experience over 30 years in this continent, it has been found more practical to separate the clinical details of the disease and its therapeutic management from the description of those factors essential for administrative control and prevention. We could not profitably use this *Precis* in the U.S.A. or Canada for official purposes, owing to the marked differences in the environmental factors and manner of living due to the higher levels of material comfort, medical and hospital care, and sanitary law enforcement to which we are accustomed.

HAVEN EMERSON

*A Guide for Nurses in the Nursing Care of Patients with Infantile Paralysis—Prepared by Joint Ortho-*

*pedic Nursing Advisory Service of the National Organization for Public Health Nursing and the National League of Nursing Education. New York: National Foundation for Infantile Paralysis, Inc., 1945. 29 pp. Free from publisher.*

Before the warmer months bring the usual crop of poliomyelitis cases, nurses will have one of the most useful, simple, and needed leaflets of instruction for giving and teaching home care of infantile paralysis that this reviewer has ever seen. *A Guide for Nurses in the Nursing Care of Patients with Infantile Paralysis* has been prepared by the Joint Orthopedic Nursing Advisory Service, and covers suggestions for general nursing care, supplies explicit instructions for attaining good body alignment, for preparing the bed, giving hot packs, with detailed description of how to measure, cut, and apply the wool. Clear diagrams are provided generously.

The *Guide* is free. There is no reason why every nurse in the United States in touch with patients should not have a copy, and there is every reason as the *Guide* will prove, why she should own her own copy. The *Guide for Parents* (No. 46A) may be used by the nurse to supplement instructions in homes where the nurse is responsible for teaching care. Write today to the National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, N. Y., for your copies of both *Guides*. DOROTHY DEMING

*The Milk Industry—By Roland W. Bartlett, Ph.D. New York: Ronald Press, 1946. 282 pp., illus. Price, \$4.50.*

The theme of this book is largely economics, although the health field is touched in a discussion of the effect of unessential health regulations in setting up trade barriers. The discussion is based upon the author's twenty years

of general study of the marketing of dairy products and an independent nation-wide study during the past two years.

Free competition in the milk business as well as in other business is urged as necessary to increase the production and consumption of milk and milk products through lowered costs of production and processing, thus providing man-sized jobs for returning veterans and others. Another suggested benefit of this program is improved nutrition through the increased per capita consumption of milk which the author shows is low in many sections of the country, especially the South. A mass of statistics is presented to show how prices of milk can be lowered through increased efficiency and that low priced store milk stimulates milk consumption. The effects of trade associations, trade unions, and official regulations on the milk business are discussed.

The author recognizes the necessity for health regulations, which, if uniform and confined to factors having a more or less direct bearing on health, will not serve as trade barriers.

WALTER D. TIEDEMAN

*Health Recovery in Europe—By Sir Arthur S. MacNalty, K.C.B., and W. Franklin Mellor. London: Muller, 1946. 180 pp. Price, \$2.00.*

The authors present an interesting review of information from many sources on health conditions and public health organization in Europe, especially in the Allied countries during German occupation and during and immediately after World War II. The public health and related economic chaos which World War II brought to Europe is well described. Organization and medical work of voluntary agencies and several official agencies which have been assisting in relief and rehabilitation activities are discussed in considerable detail.

A review of international health collaboration before the war sets the stage for the final chapter which stresses the need for future collaboration and for future international health organization.

World War II has accentuated the necessity for consideration of public health in problems in their global aspect, and this book will give interesting background information to all who wish to learn some of the details of European public health problems.

LEONARD A. SCHEELE

*VD Manual for Teachers—By Samuel D. Allison, M.D., M.P.H., and June Johnson, B.S., M.S., in collaboration with W. Tate Robinson and Elmer J. Anderson. New York: Emerson Books, Inc., 1946. 149 pp. Price, \$2.00.*

The authors and collaborators are associated with the Board of Health and schools in the Territory of Hawaii. A manual was evolved for use in the secondary schools of Hawaii when the VD educational program was launched in 1943. As an outgrowth, the present volume was prepared in modified and amplified form. Section I deals with current VD programs in schools in the United States, with suggestions as to how this material may be used and integrated into the curriculum. Section II provides VD information for the teachers, covering syphilis, gonorrhea, chancroid, granuloma inguinale, and lymphogranuloma venereum. Section III covers teaching aids, including lists of questions about the venereal diseases, visual aids, such as films, lantern slides, pamphlets, posters, radio transcriptions, recordings, and suggested texts. The volume is well organized and covers the field adequately. The question arises whether it can be used in many of our secondary schools because of the limited time usually assigned to teaching the communicable diseases.

J. A. GOLDBERG

**Public Health and Welfare Organization in Canada**—By *Harry M. Cassidy, Ph.D.* *Toronto and Boston: Ryerson Press, Bruce Humphries, Inc., 1945.* 464 pp. Price, \$5.00 paper, \$6.00 cloth.

This book presents in clear concise fashion the health and public welfare services provided in the Dominion of Canada in 1943. These services as they were in British Columbia at the time the book was written are described in detail by Dr. Cassidy, who, as Director of Welfare for that Province for a five year period, has a better background than anyone else to give an accurate description of their advanced welfare program.

Careful reading of the book indicates that under the present fiscal policy in Canada, the Prairie Provinces and the Maritimes, due to the general lack of undeveloped natural resources, are in a less favorable position to provide adequate health and welfare services for their people than British Columbia, Ontario, and Quebec. The excellent summary of the services provided by the various Provinces indicates the great need of financial aid of a permanent nature from the Federal Government.

Chapter 12, "The Road Forward," shows the requirements in respect to better administration, more services, and proper distribution of responsibility as between Federal, Provincial, and local authorities. Dr. Cassidy points out that boards and commissions should not as a rule be used for administrative purposes, except in the case of health insurance, which he assumes should be operated by a commission. The Canadian Public Health Association has publicly stated that in their opinion health insurance should preferably be operated by provincial health departments.

Altogether, Dr. Cassidy's book gives an excellent description of health and

welfare activities as they were in the nine provinces of Canada in 1943. It would be an excellent addition to the library of all health departments.

FREDERICK W. JACKSON

**The Falling Sickness**—By *Owsei Temkin, M.D.* *Baltimore: Johns Hopkins Press, 1945.* 380 pp. Price, \$4.00.

This book deals with one small segment of public ill health, epilepsy. It deals with a wide segment of time, the two milleniums which lie between Hippocrates and John Hughlings Jackson. The book is the result of a long and patient search of ancient and medieval writings for information as to what the ancients knew and thought about epilepsy. The 700 references and the author index of 700 names attest the scholarly nature of the work.

The reader will find nothing in this book which will aid him in the treatment of a patient with seizures, but nevertheless the book should be widely read. It enlarges historical perspectives, widens appreciation of the long and arduous ascent of medical knowledge and treatment. It deepens sympathy for the millions of seized persons who through the centuries have endured every conceivable indignity in the hopes of relief. Reading of *The Falling Sickness* sharpens appreciation of the advances made in recent years in the treatment of epilepsy. It is well written, and well printed on what looks like pre-war paper.

WILLIAM G. LENNOX

**Health Service Areas: Requirements for General Hospitals and Health Centers** — By *Joseph W. Mountin, Elliott H. Pennell, and Vane M. Hoge.* *Pub. Health Bull. 292.* *Washington, D. C.: Govt. Ptg. Office, 1945.* 68 pp. Price, \$.25.

Here are the specifications for the broad outlines that constitute the Hos-

pital Construction Bill (S.191) already passed by the United States Senate and under consideration by the House. It indicates a need for nearly 165,000 additional general hospital beds for the entire country, 13,500 in Texas, 10,000 in Ohio, 8,200 in Pennsylvania, and about 7,500 each in Alabama, North Carolina, and Tennessee. The five states that currently have fewer than 2 beds per 1,000 persons are Mississippi, Arkansas, Alabama, Georgia, and Kentucky; 10 others have fewer than 3 beds.

The plan projects an integrated scheme of hospitals and related facilities to cover every section of the nation through a system of base, district, and rural hospitals and health centers. Not all areas would have all the expensive facilities of the base hospital but would be able to refer cases or problems needing these facilities to the base hospital. About 750 hospital districts are proposed, 125 primary, 525 secondary, and 100 isolated districts.

The plan is further designed to correct the maldistribution of medical service by providing hospital equipment and facilities in less favored eco-

nomic regions as well as in the more favored where they are now largely concentrated. It is also designed to give health departments the facilities and housing suited to their needs. The health centers proposed, more than 14,000 in number, would house local health department activities, many of them subcenters of county or district health departments.

Of the total health centers proposed, all but about 1,200 would serve small cities and towns of under 25,000 population and rural areas. In the working out of the plan it may be found that the number of health centers in these small areas can be substantially reduced. In any event, it is to be hoped that their development will be integrated with the developments that may come out of the Emerson plan for some 1,200 district health administrative units for the entire country.

The *Bulletin* is extensively illustrated with charts and maps and with statistical tables giving basic data such as population, area, hospital beds, and physicians, for each county and each of the 750 proposed districts.

MARTHA LUGINBUHL

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**Time Marches On**—You will find plenty of support for public health services in the 1946 edition of the A.M.A.'s National Health Program. However, "medical care under (health department) auspices tends to a deterioration in quality of the service rendered" say the framers of the current model, unkindly.

ANON. National Health Program of the American Medical Association. J.A.M.A. 130, 13:861 (Mar. 30), 1946.

**It's a Health Service**—School

lunches are a factor in the child's health and necessarily become a part of the school health program, says this joint committee of the N.E.A. and A.M.A. Rules for running the lunchroom are offered.

ANON. Principles Governing School Lunches. J. School H. 16, 3:75 (Mar.), 1946.

**Quote**—The principal diseases of the heart, arteries, and kidneys, as a group, have recorded a marked decline in mortality over the past third of a

century. Unquote. Are you surprised at that unqualified assertion? There is no catch in it! Read the item: there is a graph in it you won't soon forget.

ANON. Large Decline in Mortality from Degenerative Diseases. *Stat. Bull. (Met. Life Ins. Co.)*. 27:3, 5 (Mar.), 1946.

### Rock-Bottom Health Promotion

—Five thousand and more families, mostly poor-white or colored, were dumped upon a housing project. They brought with them their prejudices and unhygienic habits but little else. With this unpromising material, the health educators and others of the afflicted county health unit set to work.

ABRAMSON, J., and FREEDMAN, D. K. Health Education in a Housing Project. *Pub. Health Nurs.* 38, 4:178 (Apr.), 1946.

**Amateur Child Psychology**—There still are too many mothers playing psychologist to their children, asserts this pediatrician who quotes F.P.A. as saying "Some mothers know their Jung better than their young." This paper discusses: mechanisms underlying behavior disorders, management of behavior disorders, and promotion of mental health.

BAKWIN, H. Behavior Problems in Children. *Am. J. Dis. Child.* 71, 2:113 (Feb.), 1946.

**Saving Hygeia from Her Friends**—Being, at heart, a farmer I look with sympathy on the ruralists' difficulties in the matter of butter vs. margarine. But when the farmer's "best friends" in the legislatures lean on the health motif to save their constituents from competition, then it is time for honesty. This paper reminds us again that fortified margarine and butter are nutritional equivalents. Incidentally, if we drank some of the milk that now goes into butter-making we'd be better off.

DUEL, H. J., JR. The Butter-Margarine Controversy. *Science.* 103, 2668:183 (Feb. 15). 1946.

**Handmaiden to Mars**—Meningitis outbreaks accompanied the War of 1812, the Mexican War, the Civil War, the Cuban Occupation and both World Wars. A statistical study reveals that all sections of the country contributed to each epidemic rise.

GOVER, M., and JACKSON, G. Cerebrospinal Meningitis: A Chronological Record of Reported Cases and Deaths. *Pub. Health Rep.* 61, 13:433 (Mar. 29), 1946.

**A Job We May Sometime Attempt**—Though influenza vaccines have been vastly improved in recent years, we have a long way to go before we'll be ready to meet another influenza pandemic head on, says this Canadian researcher. Consider the magnitude of the job of suddenly supplying and incubating enormous quantities of fertile eggs. If that hurdle were passed, the processing of new vaccines would seem to be even more formidable.

HARE, R. The Present Status of Vaccine against Influenza. *Canad. Pub. Health J.* 37, 3:83 (Mar.), 1946.

**About Berliners' Health**—Mostly from morbid curiosity, I read every word of this long account, which ends with this conclusion "in September and October a somewhat gloomy view was taken as to Berlin's fate during the winter of 1945-6. At the time of writing, it would seem that fortune has been kind and the expected epidemics have not occurred."

HORSBURGH, P. G., and RAEBURN, H. A. The Health Problem in Berlin. *Brit. M. J.* No. 4446 (Mar. 23), 1946.

**Evolution of an Idea**—With a handful of determined ladies, a capital structure of \$100, a record book, a 50¢ second-hand table, a back-room-office, and a nurse, the Philadelphia Visiting Nurse Society began business 60 years ago. This brief review of the Society's program during the succeeding decades is an instructive one.

HUBBARD, R. W. Design for Serving. *Pub. Health Nurs.* 38, 4:152 (Apr.), 1946.

**Convincing Evidence of Filth—**Smears from tableware are spread on culture media and allowed to incubate before the eyes of the restaurant help. The day-to-day growth of the cultures captures the interest of scullery man and manager alike and proves a potent means of promoting better eating-place sanitation.

JAMIESON, M. C., *et al.* Seeing Is Believing in Sanitary Control. *Canad. Pub. Health J.* 37, 3:90 (Mar.), 1946.

**Combined with Chest X-Rays, Blood Tests Were Better Accepted—**From this community health educational experience came five conclusions. Essential to learning, there must be: (1) continuing stimulation of interest; (2) use of natural environment; (3) confidence in those who present the program; (4) understandable language; (5) direction of knowledge into action. Seems logical, doesn't it?

KOCH, R. A., *et al.* San Francisco Industrial Venereal Disease Educational and Case-Finding Program. *J. Ven. Dis. Inform.* 27, 1 (Jan.), 1946.

**Good for You To Know—**Most health administrators have not yet taken an official interest in epilepsy even though a lot of people think they should. Perhaps some day they will. Excuse the philosophizing—it seems the only way to justify a mention of epilepsy in this bibliography, sacred to public health. This paper is A1 plus. Don't miss it.

LENNOX, W. G. The Epileptic Patient and the Nurse. *Am. J. Nurs.* 46, 4:219 (Apr.), 1946.

**Just the "Will To Live"—**From among the thousands of American men, prisoners of the Japanese, who succumbed to starvation, filth, and torture, 4,618 sturdy souls survived. The story

of their condition on release will curdle your blood, but if you read this paper, you'll not be one of those who are hounding Congress to complete the quick ruin of our Army.

MORGAN, H. J., *et al.* Health of Repatriated Prisoners of War from the Far East. *J.A.M.A.* 130, 15:995 (Apr. 13), 1946.

**Anent the Poisonous Qualities of DDT—**One brave volunteer swallowed 770 mg. of DDT (in olive oil). No toxic effects were noted. Part of the DDT was metabolized and excreted in the urine mostly on the second day. None was excreted unchanged chemically.

NEAL, P. A., *et al.* The Excretion of DDT (2, 2-Bis-(P-Chlorophenyl) 1, 1, 1-Trichloroethane) in Man, Together with Clinical Observations. *Pub. Health Rep.* 61, 12:403 (Mar. 22), 1946.

**Among the Economically Handicapped—**Fighting venereal diseases in Harlem ought to be the accepted, present-day symbol for the Herculean task. Harlem is bigger than Louisville or any one of six states. Representing only 11 per cent of New York City's population it has a third of all the syphilis, almost half the gonorrhea. To tackle the formidable job, a Harlem Council on Social Hygiene has been formed with sections on health education, medical care, and social protection. What each proposes to do is recounted.

SPENCER, G. A., and GORDON, R. F. Community Aspects of Venereal-Disease Control in Harlem. *New York State Med.* 46, 6:611 (Mar. 15), 1946.

**Still a Major—**For every three American soldiers and sailors killed in battle in World War II, there were two home-staying civilians who died of tuberculosis during the same months. Yes, tuberculosis control is still a top-drawer public health activity.

YERUSHALMY, J., and MORIYAMA, I. M. Tuberculosis Mortality in the United States and in Each State: 1944. *Pub. Health Rep.* 61, 1:487 (Apr. 5), 1946.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

- BETTER HEALTH FOR RURAL AMERICA.** Plans of Action for Farm Communities. By the Interbureau Committee on Post-War Programs, U. S. Department of Agriculture. Washington, D. C.: Govt. Ptg. Office, 1945. 34 pp. Price, \$20.
- CORKY THE KILLER.** A Story of Syphilis. By Harry A. Wilmer, M.D. New York: American Social Hygiene Assn., 1945. 67 pp. Price, \$1.00.
- CORNELL CONFERENCES ON THERAPY.** Vol. I. Edited by Harry Gold, M.D. New York: Macmillan, 1946. 322 pp. Price, \$3.25.
- CORNERSTONE FOR A HOUSE OF LIFE.** Washington, D. C.: Food and Agriculture Organization of the United Nations, 1946. 24 pp.
- COSMETICS AND DERMATITIS.** Skin Reactions to Popular Cosmetics. By Louis Schwartz, M.D., and Samuel M. Peck, M.D. New York: Hoeber, 1946. 189 pp. Price, \$4.00.
- DENTAL HEALTH PROGRAM FOR ELEMENTARY AND SECONDARY SCHOOLS.** By Leon R. Kramer, D.D.S. Topeka: Kansas State Board of Health, 1946. 48 pp.
- DIRECTORY OF PSYCHIATRIC CLINICS IN THE UNITED STATES AND OTHER RESOURCES,** 1946. New York: National Committee for Mental Hygiene, Inc., 1946. 78 pp. Price, \$.50.
- EIGHT YEARS OF PUBLIC HEALTH WORK,** JONES COUNTY, MISSISSIPPI, 1937-1944. By Harry E. Handley, M.D., and Carolina R. Randolph. New York: Commonwealth, 1946. 80 pp. Price, \$.50.
- FIVE IN THE FAMILY.** By Dorothy Baruch, Elizabeth Montgomery and William S. Gray. Chicago: Scott, -Foresman, 1946. 192 pp. Price, \$.96.
- GOOD FOOD AND NUTRITION FOR YOUNG PEOPLE AND THEIR FAMILIES.** By Edna P. Amidon, Dorothy E. Bradbury and Vivian V. Drenckhahn. New York: Wiley, 1946. 323 pp. Price, \$1.96.
- HANDBOOK FOR PSYCHIATRIC AIDES.** Section One: A General Guide to Work in Mental Hospitals. Edited by Frank L. Wright, Jr. Philadelphia: National Mental Health Foundation, 1946. 58 pp. Price, \$.50.
- HANDBOOK OF INFECTIOUS DISEASES WITH NOTES ON PROPHYLAXIS, SERUM TREATMENT AND VACCINATION.** By Professors C. Ionescu-Mihaesti and M. Ciucu. New York: Columbia University Press, 1946. League of Nations Publication 1945. 331 pp. Price, \$1.25.
- HEALTH GUIDE UNITS FOR OREGON TEACHERS.** (Grades 7-12.) By Howard S. Hoyman. Salem: E. C. Brown Trust, University of Oregon Medical School, 1945. 429 pp.
- HEALTH INSTRUCTION.** Tentative Manual—State of Oregon Elementary Schools. Salem: State Dept. of Education, 1945. 105 pp.
- HEATING VENTILATING AIR CONDITIONING GUIDE,** 1946. Vol. 24. New York: American Society of Heating and Ventilating Engineers, 1946. 1279 pp. Price, \$6.00.
- HOW HEREDITY BUILDS OUR LIVES.** An Introduction to Human Genetics and Eugenics. By Robert Cook and Barbara S. Burks. Washington, D. C.: American Genetic Assn., 1946. 64 pp. Price, \$.75.
- JOB PLACEMENT OF THE PHYSICALLY HANDICAPPED.** By Clark D. Bridges. New York: McGraw-Hill, 1946. 329 pp. Price, \$3.50.
- LIVING IN OUR COMMUNITIES.** Civics for Young Citizens. By Edward Krug and I. James Quillen. Chicago: Scott, Foresman, 1946. 612 pp. Price, \$2.64.
- A MALARIOLOGIST IN MANY LANDS.** By Marshall A. Barber. Lawrence: University of Kansas Press, 1946. 158 pp. Price, \$2.50.
- MANUAL OF CHILD PSYCHOLOGY.** Edited by Leonard Carmichael. New York: Wiley, 1946. 1068 pp. Price, \$6.00.
- NUTRITION STUDIES IN PUERTO RICO.** By Ana Teresa Blanco. Rio Piedras: Social Science Research Center, University of Puerto Rico, 1946. 96 pp. Price, \$.25.
- OFFICIAL AND TENTATIVE METHODS OF ANALYSIS OF THE ASSOCIATION OF OFFICIAL AGRICULTURAL CHEMISTS.** 6th ed. Washington, D. C.: Association of Official Agricultural Chemists, 1945. 932 pp. 76 illus. Price, \$6.25, Foreign, \$6.75.
- THE POPULAR MEDICAL ENCYCLOPEDIA.** The Standard Guide on Health and Disease. By Morris Fishbein, M.D. Garden City: Doubleday, 1946. 540 pp. Price, \$4.95.
- PRINCIPLES OF DYNAMIC PSYCHIATRY.** By Jules H. Masserman, M.D. Philadelphia: Saunders, 1946. 322 pp. Price, \$4.00.
- PRINCIPLES OF SOCIAL CASE RECORDING.** By Gordon Hamilton. New York: Columbia University Press, 1946. 142 pp. Price, \$2.00.

PROCEEDINGS. RECREATION CONGRESS, NATIONAL RECREATION ASSOCIATION. January 28-February 1, 1946. New York: National Recreation Association, 1946. 179 pp. Price, \$1.75.

PROCEEDINGS OF THE NATIONAL CONFERENCE OF SOCIAL WORK. Selected Papers Seventy-Second Annual Meeting, 1945. New York: Columbia University Press, 1945. 407 pp.

PROFESSIONAL NURSES. THE OUTLOOK FOR WOMEN IN OCCUPATIONS IN THE MEDICAL AND OTHER HEALTH SERVICES. U. S. Department of Labor, Women's Bureau. Washington, D. C.: Govt. Ptg. Office, 1946. 66 pp. Price, \$.15. Bulletin 203, No. 3.

PSYCHOLOGY APPLIED TO NURSING. By Lawrence Augustus Averill, Ph.D., and Florence C. Kempf, R.N. 3rd ed. Philadelphia: Saunders, 1946. 496 pp. 55 illus. Price, \$2.50.

REHABILITATION. ITS PRINCIPLES AND PRACTICE. By John Eisele Davis, Sc.D. Rev. and enlarged ed. New York: A. S. Barnes, 1946. 264 pp. Price, \$3.00.

THIRTY-THIRD ANNUAL REPORT OF THE CHIEF OF THE CHILDREN'S BUREAU. Fiscal Year ended June 30, 1945. Washington, D. C.: U. S. Dept. of Labor, Children's Bureau, 1945. 34 pp.

UNFINISHED BUSINESS IN AMERICAN EDUCATION. An Inventory of Public School Expenditures in the United States. By John K. Norton and Eugene S. Lawler. Washington, D. C.: American Council on Education, 1946. 64 pp. Price, \$1.00.

WATER BACTERIOLOGY. 6th ed. By Samuel C. Prescott, Sc.D., Charles-Edward A. Winslow, Dr.P.H., and Mac Harvey McCrady, B.S. New York: Wiley, 1946. 368 pp. Price, \$3.50.

## Best Sellers in the Book Service for May

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Preventive Medicine and Public Health. Wilson G. Smillie, M.D., 1946.....	6.00
Recommended Practice for Design, Equipment and Operation of Swimming Pools and Other Public Bathing Places. American Public Health Association. 1942.....	.50
Standard Methods for the Examination of Dairy Products. American Public Health Association. 8th ed., 1941.....paper	1.75
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AMERICAN PUBLIC HEALTH ASSOCIATION



## ASSOCIATION NEWS

### SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 12-14

#### COLONEL FRANCIS B. ELDER APPOINTED ENGINEERING ASSOCIATE FOR A.P.H.A. STAFF

The Executive Board of the American Public Health Association has appointed Colonel Francis B. Elder, Sn.C., of Madison, N. J., as Engineering Associate on a full-time basis in the central office.

A shortage of personnel in environmental sanitation was brought out in a recent American Public Health Association report, *Local Health Units for the Nation* (see *A.J.P.H.*, September, 1945, page 898). The same report noted a lack of professional leadership in the field of sanitation. Through the activities of this Associate, it is hoped to develop this needed leadership and to bring the rôle of professionally trained sanitary personnel forcibly to the attention of those responsible for public health programs.

In addition to the development of the rôle of personnel in environmental sanitation, Colonel Elder will also be specially concerned with Association activities having a close relationship to sanitation, such as, *Standard Methods for the Examination of Water and Sewage*, and *Standard Methods for the Examination of Dairy Products*, and the affairs of the Engineering Section. He will work closely with the Executive Secretary in handling Association routines in connection with the *American Journal of Public Health*, the Merit System Unit, the Annual Meeting, and

the development of recruitment of personnel for the public health profession.

Colonel Elder holds a degree in Municipal and Sanitary Engineering from Rutgers University. He also has an M.S. degree in Public Health from the University of Michigan. He has worked in one of the District Health Offices of the New Jersey State Department of Health and as Health Officer for Teaneck, N. J.

His Army assignments included that of Instructor at the Medical Field Service School, Carlisle Barracks, Pa.;



Francis B. Elder

Director of the Department of Sanitation, Medical Administrative Corps, O.C.S., Camp Barkeley, Tex.; and Engineering Consultant for the Public Health Branch of the Civil Affairs staff

division of Supreme Headquarters, Allied Expeditionary Force, and of the Office of Military Government, Headquarters, U. S. Forces, European Theater.

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

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Joaquin Fermoselle-Bacardi, M.D., 4 esquina a 11-Almendares, Habana, Cuba, Comisionado Especial de Salubridad, Ministerio de Salubridad

Edward F. Fisher, M.D., 22156 Morley Ave., Dearborn, Mich., Health Officer

John D. Fouts, M.D., 402 L County-City Bldg., Seattle, Wash., Health Officer, King County Health Dept.

Floyd D. Gindhart, M.D., 180 W. State St., Trenton, N. J., City Health Officer, City Dept. of Health

Vincent J. Gorman, Monmouth Rd., Oakhurst, N. J., Health Officer and Registrar of Vital Statistics, Ocean Township Dept. of Health

Albert L. Hildinger, M.D., Bellevue, Nebr., Director of Cass-Sarpy-Otoe Counties Health Unit

Demetrius A. Messinezy, M.B., M.P.H., American Legation, Addis Ababa, Ethiopia, Director of Health Program, UNRRA Mission to Ethiopia

Frank P. Miller, M.D., Box 472, Brownfield, Tex., Director, Four County Health Unit

Malcolm M. Neel, M.D., M.P.H., Court House, Atlanta, Ga., Asst. Commissioner, Fulton County Health Dept.

Arthur F. W. Peart, M.D., D.P.H., Health Centre Bldg., Swift Current, Sask., Canada, Regional Medical Health Officer

Anthony M. Senese, M.D., 10 N. Clark, Chicago, Ill., Formerly Health Officer for Civilian Defense, City of Chicago

George A. Silver, M.D., 1201 Greeby St., Philadelphia 11, Pa., Field Medical Officer, Northeastern Division, U. S. Dept. of Agriculture, Labor Branch

David D. Thornton, M.D., Weaverville, Trinity County, Calif., County Health Officer

Oscar F. Whitman, M.D., P. O. Box 129, Albany, Ga., Regional Medical Director, State Dept. of Public Health

William L. Wilson, M.D., 4425 River Rd.,

N.W., Washington 16, D. C., Deputy Chief, Public Health and Welfare Branch, Office of Military Government of Germany

### *Laboratory Section*

Richard Brandlon, 1791 Howard St., Chicago, Ill., Assoc. Director, North Shore Clinical Laboratory

Ruth A. Corpron, M.S., Charity Hospital, Dept. of Pathology, New Orleans, La.

Charles D. Cox, M.S., Univ. of Ill., Dept. of Bact., 362 Noyes Lab., Urbana, Ill., Asst. in Bacteriology

Edwin S. Crosby, 851 S. Illinois St., Springfield, Ill., Bacteriologist, Div. of Sanitary Engineering, State Dept. of Public Health

Kathryn A. Deloughery, 501 N. Park, Helena, Mont., Junior Bacteriologist, State Board of Health

William G. Gay, Health Dept., Essex Bldg., Norfolk, Va., Bacteriologist

James B. Greene, 40 Grosvenor St., Athens, Ohio, Sanitarian, Athens City-County General Health Dist.

Opal E. Hepler, M.D., 303 E. Chicago Ave., Chicago 11, Ill., Director of Clinical Laboratories, Passavant Memorial Hospital

Elizabeth Kilpatrick, 614 Walnut St., Knoxville, Tenn., Junior Bacteriologist, State Branch Laboratory

Roland B. Mitchell, Ph.D., State Board of Health, Jacksonville, Fla., Asst. Director, Bureau of Laboratories

Ferrin B. Moreland, Ph.D., State Public Health Labs., Topeka, Kans., Head, Chemistry Dept.

Raymond O. Muether, M.D., 1325 S. Grand Blvd., St. Louis 4, Mo., Director of Clinical Laboratories, St. Mary's Group of Hospitals

Dr. Balbir B. G. Nehaul, 233 Camp St., Georgetown, Demerara, British Guiana, S. A., Government Bacteriologist and Pathologist, Colonial Medical Service

John M. Pearce, M.D., 335 Henry St., Brooklyn, N. Y., Consulting Pathologist, Merit System Unit, American Public Health Assn.

John S. Pritchard, Jr., 270 Convent Ave., Apt. 3E, New York 31, N. Y., Formerly Medical Laboratory Technician, U. S. Army

Antonio Puras-Rivera, P. O. Box 4509, San Juan 22, Puerto Rico, Technician, Tropical Pathology Laboratory, School of Tropical Medicine

Edward L. Reed, M.S., 7408 Rhode Island Ave., College Park, Md., Assoc. Bacteriologist, State Dept. of Public Health

J. Harold Shaw, M.D., D.P.H., Dept. of Health and Welfare, Div. of Labs., Charlottetown, P.E.I., Canada, Director

Louis A. Shea, Jr., 415 Warren St., Fall River, Mass., Medical Bacteriological Research, Naval Medical Research Institute, Bethesda, Md.

Madge B. Stacy, Box 121, N. J. College for Women, New Brunswick, N. J., Asst. in Bacteriology Research

Frank M. Victor, 1205 Collins Ave., Topeka, Kans., Serologist, Public Health Laboratories, State Board of Health

Thelma Waters, 2737 Milton, Knoxville, Tenn., Junior Bacteriologist, State Branch Laboratory

Charles E. Winter, M.S., Univ. of Maryland, Dept. of Bact., College Park, Md., Bacteriologist, U. S. Fish and Wildlife Service

#### *Vital Statistics Section*

Neva R. Deardorff, Ph.D., 44 E. 23rd St., New York 10, N. Y., Director, Research and Statistics, Health Insurance Plan of Greater New York

Audrey Immel, 2122 N.E. Alameda, Portland 12, Ore., Asst. Statistician, State Board of Health

Iva M. Long, 125 W. Farragut Rd., Oak Ridge, Tenn., Statistician, Dept. of Health

Zelma A. Miser, R.N., 2200 Randolph Place, N.E., Washington 2, D. C., Social Science Analyst, Social Security Board, Bureau of Research and Statistics

Thomas T. Sheppard, M.D., 4800 Friendship Ave., Pittsburgh, Pa., Chief, Medical Staff, The Western Pennsylvania Hospital

#### *Engineering Section*

Eduardo Albornoza-Plata, C.E., 6-79 Calle 7, Bogota, Colombia, S. A., Student, Univ. of Mich., College of Engineering

Richard M. Babcock, M.P.H., 1635 Cheyenne, Lincoln, Nebr., Asst. Public Health Engineer, State Dept. of Health

Ambrose P. Bell, 9118 Bradford Rd., Silver Spring, Md., Public Health Engineer, District of Columbia Health Dept.

Charles P. Blanks, Jr., Muscogee County Health Dept., Columbus, Ga., Sanitary

Engineer, U. S. Public Health Service  
Brunson P. Bliven, P. O. Box 98, Eureka, Calif., Rodent and Insect Controller, City of Eureka

James H. Bray, Box 1350, Oxnard, Calif., Rodent Control Officer, State Dept. of Health

James T. Brennan, 238 Monticello Ave., Jersey City 4, N. J., Chief License Examiner for Master Plumbers, Board of Health

Cecil H. Connell, Ph.D., Univ. of Texas, School of Medicine, Galveston, Tex., Assoc. Prof. of Preventive Medicine and Public Health

Marcus E. Donnelly, 921 Bergen Ave., Jersey City, N. J., Exec. Secy., Hudson County Mosquito Extermination Commission

W. L. Dorton, Russell Wise Health District, Lebanon, Va., Sanitary Officer

Michael E. Doyle, M.S., 1341 Epnorth St., Atlanta, Ga., Chief Engineer, Fulton County Dept. of Public Health

J. Frank Field, 940 Pearl St., Denver 3, Colo., Passed Assistant Sanitary Engineer, (R), U. S. Public Health Service

Charles J. Hammond, Colonial Apts. 7, Nampa, Ida., Sanitarian, State Dept. of Public Health

Harold Heidt, 111 Mount Hope Place, New York, N. Y., Assoc. Director, Industrial Division, Onyx Oil and Chemical Co.

Forrest Irwin, 742 East Mound St., Columbus, Ohio, Consulting Engineer, The Urbain-Irwin Co.

Vincent P. Kelley, 1296 Woodbury Rd., Pasadena 6, Calif., Sanitary Inspector, Pasadena Health Dept.

Leonard H. Ledford, 501 Greene St., Augusta, Ga., Public Health Engineer, Richmond County Health Dept.

Thomas B. Link, Washington County Health Dept., Jonesboro, Tenn., Junior Sanitation Consultant

Roberto Lopez-Candal, Ponce de Leon 300, Santurce, Puerto Rico, Student, School of Tropical Medicine

Jorge Maldonado, 86 Eduardo Conde, Santurce, Puerto Rico, Student, School of Tropical Medicine

Romeo Mondello, 1471 Aylwin St., Montreal, P.Q., Canada, Engineer, City Health Dept.

Luciano Pena-Duran, C.E., Calle 11 No. 10-48, Cali, Colombia, S. A., Student, Univ. of Michigan College of Engineering

Wallace D. Pirie, 104 Glenwood Court, San Antonio, Tex., Chief, Div. of Milk Sanitation, City Health Dept.

Mildred D. Plummer, Courthouse, Kennett, Mo., Engineering Aide, U.S.P.H.S.

George R. Porter, 17 Van Dyke Ave., Hartford, Conn., Manufacturer of Dishwashing Machines

Arnold A. Prucha, M.S.P.H., Village Hall, Winnetka, Ill., Sanitary Engineer, Winnetka Health Dept.

Samuel C. Rich, City Health Dept., Charlotte, N. C., Milk Specialist

Angel A. Rodriguez, Torres 92, Ponce. Puerto Rico, Student, School of Tropical Medicine

Jack G. Sieg, The Capitol, Div. of Sanitary Engineering, Springfield, Ill., Senior Sanitary Engineer, State Dept. of Public Health

Richard L. Woodward, 611 Lawrence St., N. E., Washington 17, D. C., Sanitary Engineer, U. S. Public Health Service

#### *Industrial Hygiene Section*

Morris F. Collen, M.D., 280 MacArthur Blvd. West, Oakland, Calif., Director, Dept. of Internal Medicine, Permanente Foundation Hospital

I. Donald Fagin, M.D., 7930 E. Jefferson, Detroit 14, Mich., Medical Director, Health Institute of the UAW-CIO

Cornelius F. Holton, M.D., Red Bldg., Savannah, Ga., Chief Surgeon, Central of Georgia Railway

Elvin F. Hoover, 327 Central Trust Bldg., Altoona, Pa., District Industrial Hygiene Engineer, State Dept. of Health

Edwin H. Norene, 4445 S.E. 45th Ave., Portland 6, Ore., Chief, Div. of Food and Sanitation, Portland Bureau of Health

Samuel B. Potter, M.D., Corwin Hospital, Pueblo, Colo., Medical Director, Colorado Fuel and Iron Co.

Frank Princi, M.D., 1030 Washington, Denver, Colo., Fellow in Industrial Hygiene, Div. of Industrial Hygiene, School of Medicine, Univ. of Colorado

Howard L. Reed, M.D., 114 North Road, Lindamere, Wilmington, Del., Asst. Medical Director, Hercules Powder Co.

Claude Romine, Jr., 1032 E. 46th St., Chicago 15, Ill., Chemist, Industrial Hygiene Division, State Dept. of Public Health

#### *Food and Nutrition Section*

Robert G. Beaman, 5502 Johnson Ave., Bethesda 14, Md., Laboratory Research Asst., Naval Medical Research Institute

Mary O. Brakel, M.S., States Relations Div., U.S.P.H.S., Washington 25, D. C., Nutritionist

Ruth E. Brennan, M.S., 400 West Hill Ave., Knoxville, Tenn., Nutritionist, State Dept. of Public Health

Lee B. Harrison, M.D., 1755 South Grand, St. Louis, Mo., Staff Member, Missouri Pacific Hospital Assn.

Arthur S. Levine, Ph.D., Mass. State College, Amherst, Mass., Asst. Research Professor, Food Technology

Irma S. Wolfson, 1729 North Shore Rd., Revere, Mass., Assoc. Dietitian and Health Educator, Beth Israel Hospital, Boston, Mass.

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Sister Agnes, Sacred Heart Hospital, Spokane, Wash., Administrator

Mary H. Clark, M.D., 486 E. McKinley Ave., Sunnyvale, Calif., Physician, Maternal and Child Welfare, State Dept. of Public Health

Harrison S. Collisi, M.D., 501 Madison Ave., New York 22, N. Y., Medical Director, Planned Parenthood Federation of America, Inc.

Eleanor Galenson, M.D., 210 East 68th St., New York, N. Y., Pediatric Psychiatrist, Bureau of Child Hygiene, City Dept. of Health

Ellen C. Neff, R.N., 679 E. Summit, Oconomowoc, Wis., City and School Nurse

Miguel A. Romei, M.D., Curupayty 333, Asuncion, Paraguay, S. A., Director of Maternal and Child Welfare

Frank F. Schade, M.D., 1800 W. 6th St., Los Angeles 5, Calif., Queen of Angels Hospital

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Emil L. Amabile, 232 Lincoln Ave., Orange, N. J., Sanitary Inspector, Board of Health

Sidney M. Bergman, 5400 Beacon St., Pittsburgh 17, Pa., Director, Montefiore Hospital

Gertrude K. Berls, 526 Crescent Blvd., Room 328, Glen Ellyn, Ill., Exec. Secy., DuPage County Tuberculosis Assn.

Emily W. Boyd, 700 Brazos, Austin, Tex., Field Worker, Texas Tuberculosis Assn.

Frances M. Boyd, M.P.H., 518 21st St., N.E., Washington 2, D. C., Formerly Assistant in Health Education, Calhoun County Health Dept., Michigan

Frances T. Champion, 760 Market St., Room 521, San Francisco 2, Calif., Public Health Editor, State Dept. of Public Health

Martha L. Clark, M.S.P.H., Box 149, Rocky Mount, N. C., Health Educator, City Health Dept.

Helen P. Cleary, Lynn Tuberculosis League, Inc., 56 Central Ave., Lynn, Mass., Health Education Secretary

Winifred Culbertson, R.N., Childrens Convalescent Home, Cincinnati 19, Ohio, Administrator

Maria E. Diaz de Echandi, M.A., Univ. of Puerto Rico, P. O. Box 13, Rio Piedras, Puerto Rico. Instructor and Supervisor

Robert K. Fiersten, M.S., 3120 S. Fourth St., Springfield, Ill., Informational Writer, State Dept. of Public Health

Rhett G. Harris, Ph.D., Univ. of Southern Calif. Dept. of Bacteriology, Los Angeles 7, Calif., Asst. Professor of Bacteriology

Anna H. Hayes, P. O. Box 72, Twin Falls, Ida., State Representative, National Foundation for Infantile Paralysis, Inc.

Ersa E. Hines, 65 Wethersfield Ave., Hartford 6, Conn., Health Educ. Secy., Hartford Tuberculosis and Public Health Society

Robert J. M. Horton, M.D., 248 Commonwealth Ave., Boston 15, Mass., Student, Harvard School of Public Health

Frank V. Jones, Jr., 5480 College Ave., Oakland, Calif., Public Health Analyst, San Francisco Clinic

Patrick Kelley, 604 Mission St., San Francisco, Calif., Exec. Secy., San Francisco Tuberculosis Assn.

Ben D. Kiningham, Jr., M.P.H., 907 First National Bank Bldg., Springfield, Ill., Director of Health Education, Illinois Tuberculosis Assn.

R. Eline Kraabel, R.N., Deaconess Hospital, Spokane 9, Wash., Supt. of Nurses

Ruth T. Lannan, 8 Merrimack St., Lowell, Mass., Health Education Secretary, Lowell Tuberculosis Assn.

Jean E. Lees, 2560 Cedar St., Berkeley, Calif., Student, Univ. of California, School of Public Health

Mary E. Leith, Charleston County Health Dept., Charleston, S. C., Health Educator

Margaret S. Milliken, M.A., Univ. of Tenn., Biology Bldg., Knoxville, Tenn., Asst. Prof. of Health Education

Leonard C. Murray, Ph.D., State Dept. of Health, Des Moines, Iowa, Director, Div. of Public Health Education

Albert T. Peterson, 1401 Franklin St., Denver, Colo., Health Education Director, Denver Tuberculosis Society

Mary Louise Rogers, 1137 East Jersey St., Elizabeth 4, N. J., Exec. Secy., Union County Medical Society

Elizabeth L. Roose, P. O. Box 1506, Sarasota, Fla., Exec. Secy., Sarasota County Tuberculosis and Health Assn.

Emma Roura-Torres, DeDiego, 22, Arecibo, Puerto Rico, Medical Social Work Supervisor, Dept. of Health

Jayne Shover, M.A., 11 South LaSalle St., Chicago 3, Ill., Acting Director of Field Services, National Society for Crippled Children and Adults, Inc.

Arthur L. Smith, M.D., 134 S. 13th St., Lincoln, Nebr., St. Elizabeth Hospital

Cassie B. Smith, M.S.P.H., State Board of

Health, Jackson, Miss., Acting Asst. Director of Health Education

J. William Thompson, M.D., 4952 Maryland, St. Louis 8, Mo., Chairman of the Council, Missouri State Medical Assn.

Stewart C. Thomson, M.D., Byron, Ill., Formerly with Preventive Medicine Section, Office of Surgeon General, War Dept.

Margaret M. Young, R.N., Court House, Little Falls, Minn., Public Health Nurse, Morrison County Public Health Nursing Service

### *Public Health Nursing Section*

Vera S. Adair, R.N., 516 15th St., Miami Beach, Fla., Supervisor, Dade County Visiting Nurse Assn.

Margaret Bennett, R.N., 103 Stiener, Sebring, Fla., Senior Public Health Nurse, State Board of Health

Mary B. Bonner, R.N., Due West, S. C., District Tuberculosis Consultant Nurse, State Board of Health

Florence L. Bouton, R.N., M.A., 520 W. 7th St., Room 1221, Los Angeles 14, Calif., Asst. Director, California State Nurses Assn.

Violet M. Crook, Sterling Court, Union City, Tenn., Principal Public Health Nurse, Obion-Lake Dist. Dept. of Public Health

Sister Cyril, Seton School of Nursing, 2200 N. Tejon St., Colorado Springs, Colo., Director of Nursing

Sister Theodora Day, R.N., M.A., Pensacola Hospital, School of Nursing, Pensacola, Fla., Director of Nurses

Nezzie S. Elliott, Texas Farm Laborers Health Assn., Box 912, McAllen, Tex., Senior Community Nurse

Harriet E. Fagge, Box 35, Paoli, Pa., Staff Nurse, Visiting Nurse Service of New York

Helen H. Gilkey, 7941 Magnolia Ave., Riverside, Calif., Formerly Senior Adviser, Dispensary Visiting Nurse Service, Johns Hopkins Hospital

Phyllis L. Goshorn, R.N., 2401 E. 4th, Royal Oak, Mich., Public Health Nurse, U. S. Public Health Service

Elizabeth T. Harris, R.N., 1 West State St., Room 313, Trenton, N. J., Asst. Supervisor of Public Health Nurses, Bureau of Venereal Disease Control, State Dept. of Health

Ruth Henton, R.N., 207 E. Cedar St., Box 47, Olathe, Kans., Health Nurse, Johnson County Health Dept.

Eleanor M. King, M.P.H., Tennessee Valley Authority, Chattanooga, Tenn., Chief, Nursing Staff

Elma Koontz, 914 E. 39th St., Kansas City, Mo., Supervisor of Nurses, Venereal Disease Division, City Health Dept.

Margaret McGreevy, R.N., 623 2nd, LaSalle, Ill., Supervising Nurse, Hygienic Institute  
 Dorothy L. Miller, R.N., 50 W. King, York, Pa., City Health Nurse, Visiting Nurse Assn.

Agnes A. O'Leary, 215 Harvard St., S.E., Minneapolis, Minn., Instructor, Univ. of Minnesota, School of Public Health

Carmen L. Rivera, Box 664, Mayaguez, Puerto Rico, District Supervisor, Dept. of Health

Magdaline E. Roller, R.N., Center St., Ashland, Va., Asst. Nurse Officer, U. S. Public Health Service

Jennie M. Romandi, R.N., B.S., 28 Sage Ave., Buffalo 10, N. Y., Asst. District Supervising Nurse, State Dept. of Health

Yetta B. Siegel, 826 E. 178th St., New York 60, N. Y., Public Health Nurse, City Dept. of Health

Marie C. Sobaski, 5849 Clemens, St. Louis, Mo., Consultant, Public Health Nursing, American Red Cross, Midwestern Area

Viola R. Spahr, Thomasville, York County, Pa., Staff Nurse, E. I. du Pont de Nemours, Inc.

Helen W. Steck, 603 B.M.A. Bldg., Kansas City, Mo., Public Health Nurse, (R), U. S. Public Health Service

Ruby V. Wallace, R.N., 739 N. Main St., Shelbyville, Tenn., Supervising Nurse, Bedford-Marshall District Health Dept.

#### *Epidemiology Section*

LeRoy R. Allen, M.D., 2411 N. Charles, Baltimore 18, Md., Acting Deputy State Health Officer, Bureau of Communicable Diseases, State Health Dept.

Harold N. Brewster, M.D., M.P.H., 185 Spring St., Brockton 40, Mass., Asst. Director, Division of Venereal Disease, State Dept. of Public Health

Cesar Gomez, M.D., 1211 Willard St., Ann Arbor, Mich., Research Fellow, Virus Laboratory, Univ. of Michigan

John E. McCroan, Jr., Ph.D., Regional Health Office, Waycross, Ga., Public Health Biologist, State Dept. of Public Health

Robert E. Ober, M.D., 95 Nightingale St., Boston, Mass., Epidemiologist, Div. of Communicable Diseases, State Dept. of Public Health

Robert D. Shannon, U.S.P.H.S., Dist. 8, 615 Colorado Bldg., Denver 2, Colo., Senior Public Health Representative, Venereal Disease Control

Lt. Comdr. James D. Wharton (MC), U.S.N., District Medical Office, 14th Naval Dist. Navy 128, FPO, San Francisco. Calif., District Preventive Medicine Officer

Ozro B. Wiswell, M.S., 1721 Griffin Ave., Los Angeles 31, Calif., Asst. Prof. of Tropical Medicine and Parasitology, College of Physicians and Surgeons

#### *School Health Section*

Mildred S. Coyle, M.A., 126 Walnut St., Harrisburg, Pa., School Nursing Adviser, State Dept. of Public Instruction

William R. Dandridge, M.D., Dept. of Student Health, Charlottesville, Va., Acting Director, Dept. of Student Health, Univ. of Virginia

Rose I. Geckler, R.N., 328 S. 5th St., Terre Haute, Ind., School Nurse, City Board of Health

Joseph Goldberg, M.D., 73 E. 96th St., Brooklyn 12, N. Y., Physician in Public Schools and Child Health Stations, City Board of Health

John W. Hanson, M.D., Carleton College, Northfield, Minn., Director, College Health Service

John B. Klopp, M.D., 1023 Edgmont Ave., Chester, Pa., Medical Director of Schools  
 Henry S. Rich, M.D., 1180 Virginia Ave., New York, N. Y., Physician, Bureau of Child Hygiene, City Dept. of Health

Helen W. Rodman, M.A., 100 N. Main St., Providence, R. I., Exec. Secy., Children's Heart Assn. of Rhode Island

Erma R. Szabo, 2661 Locksley Place, Los Angeles, Calif., Nurse Inspector, Los Angeles Board of Education

Lawrence A. Wilson, M.D., 114 North Shore Rd., Absecon, N. J., Former Health Officer  
 Herbert J. Zellner, M.D., 260 W. 72nd St., New York 23, N. Y., School Physician, City Dept. of Health

#### *Dental Health Section*

Byron W. Bailey, D.D.S., Main St. and Wright Ave., Bradford, Vt., With State Dept. of Health

Philip E. Blackerby, Jr., D.D.S., M.S.P.H., W. K. Kellogg Foundation, Battle Creek, Mich., Dental Director

T. E. Burrington, D.D.S., P. O. Box 5, Rapid City, S. D., Dentist

Ralph E. Creig, D.D.S., 10465 Carnegie Ave., Cleveland 6, Ohio, Dental Surgeon, (R), U. S. Public Health Service

Frank E. Law, D.D.S., 54 Earle St., Woonsocket, R. I., Director, Woonsocket Dental Studies Program, U. S. Public Health Service

James P. Leonard, D.D.S., 1605 Arlington Ave., Davenport, Iowa, School Dentist, Board of Health

VanDyke McCool, D.D.S., Box 337, Warren, Ill., School Dentist, Freeport Public Schools

Robert K. Fiersten, M.S., 3120 S. Fourth St., Springfield, Ill., Informational Writer, State Dept. of Public Health

Rhett G. Harris, Ph.D., Univ. of Southern Calif. Dept. of Bacteriology, Los Angeles 7, Calif., Asst. Professor of Bacteriology

Anna H. Hayes, P. O. Box 72, Twin Falls, Ida., State Representative, National Foundation for Infantile Paralysis, Inc.

Ersa E. Hines, 65 Wethersfield Ave., Hartford 6, Conn., Health Educ. Secy., Hartford Tuberculosis and Public Health Society

Robert J. M. Horton, M.D., 248 Commonwealth Ave., Boston 15, Mass., Student, Harvard School of Public Health

Frank V. Jones, Jr., 5480 College Ave., Oakland, Calif., Public Health Analyst, San Francisco Clinic

Patrick Kelley, 604 Mission St., San Francisco, Calif., Exec. Secy., San Francisco Tuberculosis Assn.

Ben D. Kiningham, Jr., M.P.H., 907 First National Bank Bldg., Springfield, Ill., Director of Health Education, Illinois Tuberculosis Assn.

R. Eline Kraabel, R.N., Deaconess Hospital, Spokane 9, Wash., Supt. of Nurses

Ruth T. Lannan, 8 Merrimack St., Lowell, Mass., Health Education Secretary, Lowell Tuberculosis Assn.

Jean E. Lees, 2560 Cedar St., Berkeley, Calif., Student, Univ. of California, School of Public Health

Mary E. Leith, Charleston County Health Dept., Charleston, S. C., Health Educator

Margaret S. Milliken, M.A., Univ. of Tenn., Biology Bldg., Knoxville, Tenn., Asst. Prof. of Health Education

Leonard C. Murray, Ph.D., State Dept. of Health, Des Moines, Iowa, Director, Div. of Public Health Education

Albert T. Peterson, 1401 Franklin St., Denver, Colo., Health Education Director, Denver Tuberculosis Society

Mary Louise Rogers, 1137 East Jersey St., Elizabeth 4, N. J., Exec. Secy., Union County Medical Society

Elizabeth L. Roose, P. O. Box 1506, Sarasota, Fla., Exec. Secy., Sarasota County Tuberculosis and Health Assn.

Emma Roura-Torres, DeDiego, 22, Arecibo, Puerto Rico, Medical Social Work Supervisor, Dept. of Health

Jayne Shover, M.A., 11 South LaSalle St., Chicago 3, Ill., Acting Director of Field Services, National Society for Crippled Children and Adults, Inc.

Arthur L. Smith, M.D., 134 S. 13th St., Lincoln, Nebr., St. Elizabeth Hospital

Cassie B. Smith, M.S.P.H., State Board of

Health, Jackson, Miss., Acting Asst. Director of Health Education

J. William Thompson, M.D., 4952 Maryland, St. Louis 8, Mo., Chairman of the Council, Missouri State Medical Assn.

Stewart C. Thomson, M.D., Byron, Ill., Formerly with Preventive Medicine Section, Office of Surgeon General, War Dept.

Margaret M. Young, R.N., Court House, Little Falls, Minn., Public Health Nurse, Morrison County Public Health Nursing Service

#### *Public Health Nursing Section*

Vera S. Adair, R.N., 516 15th St., Miami Beach, Fla., Supervisor, Dade County Visiting Nurse Assn.

Margaret Bennett, R.N., 103 Stiener, Sebring, Fla., Senior Public Health Nurse, State Board of Health

Mary B. Bonner, R.N., Due West, S. C., District Tuberculosis Consultant Nurse, State Board of Health

Florence L. Bouton, R.N., M.A., 520 W. 7th St., Room 1221, Los Angeles 14, Calif., Asst. Director, California State Nurses Assn.

Violet M. Crook, Sterling Court, Union City, Tenn., Principal Public Health Nurse, Obion-Lake Dist. Dept. of Public Health

Sister Cyril, Seton School of Nursing, 2200 N. Tejon St., Colorado Springs, Colo., Director of Nursing

Sister Theodora Day, R.N., M.A., Pensacola Hospital, School of Nursing, Pensacola, Fla., Director of Nurses

Nezzie S. Elliott, Texas Farm Laborers Health Assn., Box 912, McAllen, Tex., Senior Community Nurse

Harriet E. Fagge, Box 35, Paoli, Pa., Staff Nurse, Visiting Nurse Service of New York

Helen H. Gilkey, 7941 Magnolia Ave., Riverside, Calif., Formerly Senior Adviser, Dispensary Visiting Nurse Service, Johns Hopkins Hospital

Phyllis L. Goshorn, R.N., 2401 E. 4th, Royal Oak, Mich., Public Health Nurse, U. S. Public Health Service

Elizabeth T. Harris, R.N., 1 West State St., Room 313, Trenton, N. J., Asst. Supervisor of Public Health Nurses, Bureau of Venereal Disease Control, State Dept. of Health

Ruth Henton, R.N., 207 E. Cedar St., Box 47, Olathe, Kans., Health Nurse, Johnson County Health Dept.

Eleanor M. King, M.P.H., Tennessee Valley Authority, Chattanooga, Tenn., Chief, Nursing Staff

Elma Koontz, 914 E. 39th St., Kansas City, Mo., Supervisor of Nurses, Venereal Disease Division, City Health Dept.

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Robert K. Piesten, M.S., 3120 S. Fourth St., Springfield, Ill., International Writer, State Dept. of Public Health  
Rhett G. Harris, Ph.D., Univ. of Southern Calif. Dept. of Bacteriology, Los Angeles 7, Calif., Asst. Professor of Bacteriology  
Anna H. Hayes, P. O. Box 72, Twin Falls, Ida., State Representative, National Foundation for Infantile Paralysis, Inc.  
Ersa E. Hines, 65 Wethersfield Ave., Hartford 6, Conn., Health Educ. Secy., Hartford Tuberculosis and Public Health Society  
Robert J. M. Horton, M.D., 248 Commonwealth Ave., Boston 15, Mass., Student, Harvard School of Public Health  
Frank V. Jones, Jr., 5480 College Ave., Oakland, Calif., Public Health Analyst, San Francisco Clinic  
Patrick Kelley, 604 Mission St., San Francisco, Calif., Exec. Secy., San Francisco Tuberculosis Assn.  
Ben D. Kilmington, Jr., M.P.H., 907 First National Bank Bldg., Springfield, Ill., Director of Health Education, Illinois Tuberculosis Assn.  
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- Elma Koontz, 914 E. 39th St., Kansas City, Mo., Supervisor of Nurses, Venereal Disease Division, City Health Dept.

Margaret McGreevy, R.N., 623 2nd, LaSalle, Ill., Supervising Nurse, Hygienic Institute  
 Dorothy L. Miller, R.N., 50 W. King, York, Pa., City Health Nurse, Visiting Nurse Assn.

Agnes A. O'Leary, 215 Harvard St., S.E., Minneapolis, Minn., Instructor, Univ. of Minnesota, School of Public Health

Carmen L. Rivera, Box 664, Mayaguez, Puerto Rico, District Supervisor, Dept. of Health

Magdaline E. Roller, R.N., Center St., Ashland, Va., Asst. Nurse Officer, U. S. Public Health Service

Jennie M. Romandi, R.N., B.S., 28 Sage Ave., Buffalo 10, N. Y., Asst. District Supervising Nurse, State Dept. of Health

Yetta B. Siegel, 826 E. 178th St., New York 60, N. Y., Public Health Nurse, City Dept. of Health

Marie C. Sobaski, 5849 Clemens, St. Louis, Mo., Consultant, Public Health Nursing, American Red Cross, Midwestern Area

Viola R. Spahr, Thomasville, York County, Pa., Staff Nurse, E. I. du Pont de Nemours, Inc.

Helen W. Steck, 603 B.M.A. Bldg., Kansas City, Mo., Public Health Nurse, (R), U. S. Public Health Service

Ruby V. Wallace, R.N., 739 N. Main St., Shelbyville, Tenn., Supervising Nurse, Bedford-Marshall District Health Dept.

#### *Epidemiology Section*

LeRoy R. Allen, M.D., 2411 N. Charles, Baltimore 18, Md., Acting Deputy State Health Officer, Bureau of Communicable Diseases, State Health Dept.

Harold N. Brewster, M.D., M.P.H., 185 Spring St., Brockton 40, Mass., Asst. Director, Division of Venereal Disease, State Dept. of Public Health

Cesar Gomez, M.D., 1211 Willard St., Ann Arbor, Mich., Research Fellow, Virus Laboratory, Univ. of Michigan

John E. McCroan, Jr., Ph.D., Regional Health Office, Waycross, Ga., Public Health Biologist, State Dept. of Public Health

Robert E. Ober, M.D., 95 Nightingale St., Boston, Mass., Epidemiologist, Div. of Communicable Diseases, State Dept. of Public Health

Robert D. Shannon, U.S.P.H.S., Dist. 8, 615 Colorado Bldg., Denver 2, Colo., Senior Public Health Representative, Venereal Disease Control

Lt. Comdr. James D. Wharton (MC), U.S.N., District Medical Office, 14th Naval Dist. Navy 128, FPO, San Francisco, Calif., District Preventive Medicine Officer

Ozro B. Wiswell, M.S., 1721 Griffin Ave., Los Angeles 31, Calif., Asst. Prof. of Tropical Medicine and Parasitology, College of Physicians and Surgeons

#### *School Health Section*

Mildred S. Coyle, M.A., 126 Walnut St., Harrisburg, Pa., School Nursing Adviser, State Dept. of Public Instruction

William R. Dandridge, M.D., Dept. of Student Health, Charlottesville, Va., Acting Director, Dept. of Student Health, Univ. of Virginia

Rose I. Geckler, R.N., 328 S. 5th St., Terre Haute, Ind., School Nurse, City Board of Health

Joseph Goldberg, M.D., 73 E. 96th St., Brooklyn 12, N. Y., Physician in Public Schools and Child Health Stations, City Board of Health

John W. Hanson, M.D., Carleton College, Northfield, Minn., Director, College Health Service

John B. Klopp, M.D., 1023 Edgmont Ave., Chester, Pa., Medical Director of Schools  
 Henry S. Rich, M.D., 1180 Virginia Ave., New York, N. Y., Physician, Bureau of Child Hygiene, City Dept. of Health

Helen W. Rodman, M.A., 100 N. Main St., Providence, R. I., Exec. Secy., Children's Heart Assn. of Rhode Island

Erma R. Szabo, 2661 Locksley Place, Los Angeles, Calif., Nurse Inspector, Los Angeles Board of Education

Lawrence A. Wilson, M.D., 114 North Shore Rd., Absecon, N. J., Former Health Officer  
 Herbert J. Zellner, M.D., 260 W. 72nd St., New York 23, N. Y., School Physician, City Dept. of Health

#### *Dental Health Section*

Byron W. Bailey, D.D.S., Main St. and Wright Ave., Bradford, Vt., With State Dept. of Health

Philip E. Blackerby, Jr., D.D.S., M.S.P.H., W. K. Kellogg Foundation, Battle Creek, Mich., Dental Director

T. E. Burrington, D.D.S., P. O. Box 5, Rapid City, S. D., Dentist

Ralph E. Creig, D.D.S., 10465 Carnegie Ave., Cleveland 6, Ohio, Dental Surgeon, (R), U. S. Public Health Service

Frank E. Law, D.D.S., 54 Earle St., Woonsocket, R. I., Director, Woonsocket Dental Studies Program, U. S. Public Health Service

James P. Leonard, D.D.S., 1605 Arlington Ave., Davenport, Iowa, School Dentist, Board of Health

VanDyke McCool, D.D.S., Box 337, Warren, Ill., School Dentist, Freeport Public Schools

*Unaffiliated*

- Harold B. Anderson, M.D., Scott and White Clinic, Temple, Tex.
- W. Dale Arnold, M.D., 601 Broadway, Gary, Ind., Professional Dept., Walgreen Company
- Kenneth B. Babcock, M.D., 4160 John R. St., Detroit 1, Mich., Professional Director, The Grace Hospital
- J. H. Baillie, M.D., D.P.H., 150 College St., Toronto, Ontario, Canada, Exec. Director, Canadian Public Health Assn.
- Lawrence J. Bradley, R.N., B.A., The Genesee Hospital, 224 Alexander St., Rochester, N. Y., Director
- Herbert Emmerich, 1313 E. 60th St., Chicago 37, Ill., Director, Public Administration Clearing House
- Maxwell S. Frank, M.D., Beth Israel Hospital, Stuyvesant Park East, New York 3, N. Y., Medical Director
- Ada T. Graham, 986 Third Ave., Salt Lake City 3, Utah, Exec. Secy., Utah Tuberculosis Assn.
- Ernest M. Gruenberg, M.D., 40 Monroe St., Apt. BJ9, New York 2, N. Y., Practising Physician
- James Hamlin-Howard, Portland Open Air Sanitarium, Milwaukee, Ore., Practical Male Nurse
- Anne L. Harwick, M.S., 1927 8th Ave. South, Apt. 1-A, Birmingham, Ala., Medical Social Worker, Jefferson-Hillman Hospital
- John H. Hayes, 111 E. 76th St., New York 21, N. Y., Supt., Lenox Hill Hospital
- Susan Jahoda, M.D., 59 Vanderbilt Ave., Manhasset, N. Y., Social Worker, Community Service Society of New York
- Beatrice Katz, M.D., Triboro Hospital, Jamaica 2, N. Y., Deputy Medical Superintendent
- Carolyn Kingdon, 300 E. 44th St., New York, N. Y., Exec. Asst., Medical Dept., National Foundation for Infantile Paralysis Inc.
- Wilfred D. Langley, M.D., Robert Packer Hospital, Sayre, Pa., Guthrie Clinic
- John H. Law, M.D., 4160 John R. St., Detroit 1, Mich., Director, The Grace Hospital
- Charles D. Marple, M.D., 1200 North State St., Los Angeles 33, Calif., Resident, Internal Medicine, Los Angeles County Hospital
- Sylvia Olah, R.N., Yale School of Medicine, Dept. of Public Health, New Haven, Conn., Student
- James F. Pierce, 315 W. 20th St., Cheyenne, Wyo., Sanitarian, Laramie County Health Unit
- Henry N. Pratt, M.D., Memorial Hospital, 444 E. 68th St., New York 21, N. Y., Asst. to the Medical Director

- John E. Ransom, 12 Capitol Square S.W., Atlanta 3, Ga., Hospital Consultant, State Dept. of Public Health
- Ward Reed, Atlantic County Mental Hospital, Northfield, N. J., President, Absecon City Board of Health
- Wyman Walker, 804 Persons Bldg., Macon, Ga., Interested Citizen
- Harry J. White, M.D., Box 151, Metuchen, N. J., Supt. and Medical Director, Roosevelt Hospital

CLOSING DATE FOR ACCEPTING  
FELLOWSHIP APPLICATIONS

September 1 will be the closing date for accepting applications for Fellowship to be considered at the 1946 Annual Meeting in November. Members who are eligible and are interested in becoming Fellows are urged to submit their applications, completely filled in and sponsored, as far in advance of this date as possible.

## DECEASED MEMBERS AND FELLOWS

*Fellows*

- D. B. Lowe, M.D., Akron, Ohio, Elected Member 1915, Charter Fellow, Industrial Hygiene Section
- Fred Marlin Meader, M.D., Kalamazoo, Mich., Elected Member 1912, Charter Fellow, Health Officers Section
- George L. Salisbury, M.D., Wickford, R. I., Elected Member 1931, Elected Fellow 1934, Health Officers Section

*Members*

- Helen Baldwin, M.D., Canterbury, Conn., Elected Member 1939, Health Officers Section
- Arthur S. Bedell, Delmar, N. Y., Elected Member 1919, Engineering Section
- Marie I. Bestul, R.N., Minneapolis, Minn., Elected Member 1944, Public Health Nursing Section
- A. Edward Bostrom, M.D., Albany, Ore., Elected Member 1938, Health Officers Section
- Harry M. Eudowe, New Haven, Conn., Elected Member 1938, Laboratory Section
- John E. Floyd, Ashville, N. C., Elected Member 1940, Engineering Section
- Nell P. Hall, Champaign, Ill., Elected Member 1931, Laboratory Section
- Edward E. Hamer, M.D., Carson City, Nev., Elected Member 1944, Health Officers Section
- Harry L. Kadet, M.S., Brooklyn, N. Y., Elected Member 1944, Engineering Section

NEW GRANTS TO THE A.P.H.A. MERIT  
SYSTEM UNIT

The Merit System Unit of the American Public Health Association announces that it has received a grant of \$11,750 from the March of Dimes funds of the National Foundation for Infantile Paralysis. The grant is to be used by the Unit to carry on research and field study in the development of reliable procedures for the selection of public health personnel by local merit system and civil service agencies. This new project represents an extension of the examination services offered by the Unit at the present time to state civil service and merit system agencies. It is the purpose of the Unit to develop procedures and techniques which will insure the appointment of the most highly qualified persons available to official health agencies at all levels. It is recognized that inherent in the problem of increasing knowledge in the diagnosis, treatment, and prevention of poliomyelitis is the caliber of the public health personnel who deal with the control of this disease.

The techniques for the examination of professional health personnel have already been well established in connection with the state examination program and are readily adaptable to the development of examinations at the local level. It is proposed, however, that the Unit offer county and city examining agencies more complete facilities than have been made available to states. It is planned that this program will include the actual duplication of the examinations, scoring and analysis of results, and the advisory services of a field consultant attached to the Unit's staff.

Through the coöperation of the U. S. Public Health Service, the Unit is also engaged in an investigation of the possibility of preparing standardized examinations for use at the state level. These examinations will necessarily be limited to positions for which states have developed uniform job specifications. They will have the advantage of greater validity and reliability than can be obtained with individually prepared examinations; they will make possible the development of norms against which a state can more meaningfully evaluate the achievement of its candidates; and they will also permit the establishment of joint registers.

Both of these new developments in the Unit's activities represent a significant expansion of its program and will enable the Unit further to increase the usefulness of its service to the public health.

## SUBCOMMITTEE ON MEDICAL CARE

Cozette Hapney of Washington, D. C., has recently been appointed as a Research Associate on the staff of the Subcommittee on Medical Care, Committee on Administrative Practice, of the American Public Health Association.

Miss Hapney, whose home is in Fort Collins, Colo., was graduated from Colorado State College in April, 1945, with a major in sociology. Following her graduation she was selected as a 1945-1946 intern with the National Institute of Public Affairs in Washington, D. C. During her internship Miss Hapney served in the Office of the Chief Medical Officer of the Farm Security Administration, U. S. Department of Agriculture, and in the Research Department of the *Washington Post*.

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in May Journal)

**Wanted:** Public health nurses in newly organized and growing health department, Chicago area. Starting salary \$2,100 or more, depending on qualifications, plus \$50 monthly travel allowance. Must be Illinois certified or eligible. Apply Director, DuPage County Health Department, 52 East St., Charles Road, Villa Park, Ill.

**Sanitary or Public Health Engineer** wanted in Training Center in Louisiana, to teach various phases of environmental sanitation practice and supervise field training of sanitary inspectors. Position to be covered by State Civil Service with grade of Public Health Engineer III. Starting salary \$350 monthly. Man experienced in the usual and varied activities of county health department desired. Apply Dr. David E. Brown, State Health Officer, New Orleans 7, La.

**Wanted:** Physician to serve as director of health and hygiene for Board of Education of Cincinnati. Experience in routine medical examinations of adults, in pediatrics and in public health education is desirable. Beginning salary \$454 per month on 11 month basis. Apply Board of Education, 216 E. Ninth St., Cincinnati, Ohio.

**Public Health Nursing** positions available, rural county health departments, Washington State, need urgent. Salary range for qualified public health nurses with experience \$190 to \$230 plus travel. Write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle 4, Washington.

**Wanted:** Public Health Nurses, one white and one colored, with special training in tuberculosis work, to act as consultants, advise field nurses regarding their home visits, participate in student educational program, participate in staff educational program and act as consultants to tuberculosis clinics for Louisville and Jefferson County Health Dept., which is affiliated with University of Louisville School of Medicine. Salary \$175 per month. Also Supervisor to supervise districts in general program.

Applications received by Louisville Civil Service Board, 300 City Hall, Louisville 2, Ky.

**Wanted Immediately:** Physician to serve as health officer in large local department in State of Washington. Salary range \$5,280 to \$6,300, entrance varying with education and experience of candidate. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle, Wash.

**Wanted:** Experienced Sanitarians with college degree to serve in local health departments. Salary range \$2,400 to \$2,880, entrance varying with education and experience of candidate. Opportunities of advancement to Senior Sanitarian with salary range \$2,760 to \$3,360. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle, Wash.

**Health Officers Wanted:** Positions open in Georgia for county and district commissioners of health. Salaries for experienced public health physicians range from \$4,800 to \$6,600. Salaries for physicians with public health training who are entering the field range from \$3,960 to \$4,920. Liberal travel allowance. Tenure of office assured by a merit system. License to practise in Georgia required. Ample opportunities for training offered with liberal stipend while in training. Write T. F. Abercrombie, M.D., Director, State Health Dept., State Office Bldg., Atlanta 3, Ga., for application and full details.

**Sanitarians Wanted:** Several permanent positions available for sanitarians in County and District Health Depts. in Georgia. Salaries range from \$2,100 to \$3,360 varying with education, experience, and duties assigned. Liberal travel allowance given. College graduates preferred but opportunities available for non-college graduates who can offer experience in sanitation activities. Write Personnel Administrator, State Health Dept., Atlanta 3, Ga., for application and full details.

**Tuberculosis Control Officers Wanted:** A program of increased emphasis on control of tuberculosis requires 9 additional tuberculosis control officers in Georgia Dept. of Public Health. Salaries from \$4,800 to \$6,600 plus travel, according to education, experience, duties assigned, and length of service. Some positions available for physicians experienced in tuberculosis diagnosis and treatment who do not yet have public health experience. Write Dr. T. F. Abercrombie, Director State Health Dept., State Office Bldg., Atlanta 3, Ga., for application and full details.

**Public Health Nurses needed in Georgia.** State and County Depts. of Public Health in Georgia invite qualified public health nurses to apply for permanent positions in Georgia. Staff nurses must have minimum of 6 months post-graduate public health nursing education in addition to acceptable basic training. Salaries range from \$1,860 to \$2,040 in addition to liberal travel allowance. Supervisory nurses must have at least 2 years' experience in public health nursing as well as 1 academic year of post-graduate training in public health nursing. Salaries range from \$2,100 to \$2,280 in addition to travel allowance. Scholarships available for graduate nurses interested in receiving public health nursing training. Write Personnel Administrator, State Health Dept., Atlanta 3, Ga., for application and full details.

**Wanted: Medical Social Worker** for challenging position. Combination case work and community organization in voluntary health agency, Denver, Colo. No travel. Write Box K, Employment Service, A.P.H.A.

**Wanted: Health Officer.** Salary \$6,000. Requirements: graduation from medical school of recognized standing, 3 years' medical practice, graduate of recognized school of public health with at least one year's attendance. Full-time position. City of 27,000. Apply George A. Tierney, 164 Court St., Middletown, Conn.

**The Cleveland Child Health Association,** a member of the Welfare Federation of Cleveland supported by the Community Fund, is seeking woman qualified to head well established prenatal instruction program. The following qualifications have been established: candidate must be registered nurse with college degree and special training in obstetrics and public health. Previous teaching experience and knowledge of sewing preferred. A rapidly expanding program offers unusual opportunities. Salary \$3,300 per year plus transportation with month's leave each August. Inquiries may be addressed to Mr. Wirth Howell, Acting Director, Cleveland Child Health Association, 1001 Huron Road, Cleveland 15, Ohio.

### Announcements of Scholarships in Nutrition

Four scholarships available, through North Carolina State Board of Health, at University of Tennessee, Knoxville, for year 1946. Applicants can enter in March or June. Scholarships will provide stipend of \$100 a month for 12 months plus tuition fees and travel while in training. Training period will be for 12 months and will include 9 months' formal training and 3 months' supervised field work. Eligibility requirements: (a) Age between 23 and 35 years; (b) Bachelor's degree in foods and nutrition, chemistry or biological sciences from a recognized institution; (c) teaching, hospital dietetics, nutrition research or other related subjects for a period of at least 2 years. Upon successful completion of training at University of Tennessee, candidates will be employed as nutritionists by North Carolina State Board of Health. Salary scale for nutritionists is \$1,800 to \$3,000 with additional travel allowance of \$1,200 a year. Interested applicants should send transcript of their college record and statement of experience since graduation to Director of Nutrition Division, State Board of Health, Raleigh, N. C.

### New York State Department of Health Offers Scholarships

Tuition for two semesters' study in public health nursing at approved university and monthly maintenance of \$100 for graduate nurses qualifying. Must be eligible to register in New York State. After preparation there is a two year field obligation to serve as rural public health nurse in upstate New York. Apply to Katherine E. Payne, R.N., New York State Department of Health, Albany 1, N. Y.

### Fellowships in Dental School

School of Dental and Oral Surgery, Faculty of Medicine, Columbia University, announces establishment of a limited number of fellowships for graduates of dental

schools. These fellowships will offer opportunity for study in the following basic science departments of the university: Anatomy, Bacteriology, Biochemistry, Pathology, Pharmacology, Physiology. For further information regarding qualifications and stipend address Dean of Faculty of Medicine, Columbia University, 630 West 168th St., New York, N. Y.

### New York State Department of Health

New York State Department of Health plans 10 or more appointments of Assistant District Health Officer at beginning salary of \$4,560 plus travel, with annual increments to a maximum of \$5,700. After one year's service Assistant District Health Officer having the required professional qualifications is eligible for promotion to District Health Officer and to certain specialized central office positions, salary range \$5,928 to \$7,353, and after experience in the higher position promotion to next salary grade can be made; he can be assigned any time to position of Epidemiologist in Division of Communicable Diseases. Benefits include one month vacation annually, liberal sick leave, and participation in state retirement plan. Examination open to residents and non-residents of New York State to be held about July 1, 1946. Immediate provisional appointments can be made pending results of examination. Duties: Assistant District Health Officer is assigned to branch office serving 2 or more counties. Under general direction of District Health Officer he coordinates local public health activities, conducts epidemiological investigations of outbreaks and individual cases of communicable disease, including venereal disease and tuberculosis, and institutes appropriate control measures, conducts or supervises various clinics, promotes improved local health services and performs other public health work required. Qualifications: Citizenship, graduation from approved medical school, license or eligibility for license in New York State, 4 years' satisfactory full-time experience in responsible public health position within 6 years immediately preceding announced date of examination (excepting period of service in armed forces will not be included in the 6 years); 6 months' satisfactory full-time experience in responsible public health position within 3 years immediately preceding date of examination (service in armed forces not included in the 3 years), and satisfactory completion of postgraduate course in public health approved by New York State Public Health Council of one academic year in residence. Interested qualified applicants should write to State Department of Health, Albany 1, N. Y., for further information and application form.

### POSITIONS WANTED

Physician, public health and administrative experience, considerable experience as medical examiner, seeks part-time position with city or state health department or industrial concern as preemployment examiner and health supervisor, New Orleans area. A-518

Serologist. A.M., over 7 years' experience in serology of syphilis and related fields in state health dept. laboratory and

in central laboratories of U. S. Army desires position as head of serology section of state health department or research institute. Wide knowledge of public health laboratory procedures. L-489

D.D.S., Veteran, 11 years' practical experience. M.P.H. expected 1946. Wishes administrative position in public health administration. M-464

## Advertisement

# Opportunities Available

**WANTED**—(a) Director of Bureau of maternal and child hygiene; experience or training in pediatrics, public health or obstetrics desirable. (b) Public health physician with administrative experience or ability to direct department serving town of 45,000; progressive program, well staffed department; \$7,000; South. (c) Director of student health; men's college; enrollment of 800 students; nine-month year; possibility of continuing during summer months; town of 100,000; East. (d) Young woman physician for student health appointment; liberal arts college, co-educational; approximately 5,000 students; well equipped department; 10-month year; \$4,500; Pacific Coast. (e) Large city in Pacific Northwest requires school physician, preferably with public health training; 20,000 students; excellent opportunity for one interested in reorganization of school health program; corps of six nurses, supervisor of nurses, and dental hygienist; advantageous if physician has background in physical education. (f) Professor and head of department of hygiene; state university planning expansion program and offering curriculum in Public Health whereby students may major and receive Baccalaureate degree; young man experienced in teaching qualified to develop program required. (g) Registrar of vital statistics and epidemiologist; municipal department of health; Middle West. (h) Young woman to join staff of student health department, young woman's college; southern town of 15,000; \$4,000 for 9-month term including complete maintenance. **PHG-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

**WANTED**—Dentists with arts college degree and experienced in dental health, particularly training in relation to children's dental problems, for faculty

appointment in medical college of university and with state board of health in maternity and child health program; responsibilities would be associated with medical school and with graduate programs carried out for medical profession and also laity. **PHG-2** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

**WANTED**—(a) Director of health education; private health agency conducting year-round program throughout one of the Middle Western States; although organization specializes in tuberculosis work, would not be expected to emphasize tuberculosis. (b) Health educator for city department of health; capable organizer required; salary around \$3,000. (c) Health educator; city department of health; central metropolis; \$3,700. (d) Health educator to work in conjunction with public health and medical departments of large industrial company; duties consist of preparation and dissemination of information relating to public health; West. **PHG-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

**WANTED**—(a) Advisory public health nurse and, also, county public health nurse; former position requires administrative ability; salary \$210-\$270; salary for staff position starts at \$150. (b) Student health nurse; newly created department, state teachers college; duties include developing and supervising health education program; Middle West. (c) Executive and staff nurses for state department of health entering expanded program of activities; will be assigned to county health officers throughout state. (d) Hospital consultant; state department of health; Middle West. **PHG-4** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

## Advertisement

# Opportunities Wanted

Young dentist, graduate of Western Reserve University School of Dentistry; several years' successful private practice; interested in teaching and public health dentistry; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Health educator; B.S., M.S., MPH (majors, health education); middle western university; considerable teaching experience; two years, health educator, county health unit; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist; MSPH degree with major in public health laboratory work; graduate work taken specifically to qualify him to operate public health laboratory; three years with Army where his work was limited to bacteriology and laboratory work; before joining Army had had four years' experience as bacteriologist and laboratory director, county health unit; for further information, please write Burneice

Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Public health nurse is available for administrative position in public health; Bachelor of Science in Education with major in Public Health nursing; past several years, supervisor, public health staff, important war project; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Public health director; Ph.B., C.P.H., M.D. degrees; experience before entering medical school consisted of year as research assistant in public health; two years as statistician with tuberculosis organization; upon completing internship had four years' experience as county health officer; three years' industrial experience (wartime assignment); now director of metropolitan department of health; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.



## NEWS FROM THE FIELD

### EPIDEMIC AID UNITS FOR POLIO OUTBREAKS

Assistance to public health authorities, hospitals, and medical personnel in the event of outbreaks of infantile paralysis this summer will be made available by the National Foundation for Infantile Paralysis, it has been announced by Basil O'Connor, President.

Four Epidemic Aid Units have been set up from teaching institutions in which medical and technical students are receiving special instruction in the care of infantile paralysis cases. They will be on call upon the request of public health officers at such time as special assistance is deemed necessary to insure the best possible service to infantile paralysis patients. Each unit consists of one or more physicians, two physical therapists, an orthopedic nurse and, when possible, an epidemiologist.

It is not necessary to wait until infantile paralysis cases in a community reach epidemic proportions before requesting the services of such a unit, Mr. O'Connor explained. The primary function of the units is consultation and teaching, which is most effective if the unit is called early.

The units will spend a limited period of time in each area. Decision as to where they are sent rests with the medical department of the National Foundation for Infantile Paralysis, 120 Broadway, New York, and will be determined by the urgency of the situation and the available units.

The National Foundation made preliminary efforts in this direction during the summer of 1945, when units were set up in connection with the medical and physical therapy schools at Harvard University, D. T. Watson-University

of Pittsburgh, Northwestern University and Stanford University. The plan, which was tried out last year, now is established as part of the National Foundation program, with the same four institutions participating. More units, set up with due regard for geographical distribution of their services, may be added if required.

The essential problem when infantile paralysis strikes is to make hospital facilities and trained professional personnel available within a short period of time, according to Mr. O'Connor. The Epidemic Aid Units bring the experience of medical, nursing, and physical therapy personnel, who have been through similar experiences in other places, to physicians, nurses, and physical therapists in the area requesting such assistance.

The unit when assigned to an area can offer short courses in the care and treatment of infantile paralysis to local professional personnel, as well as assist in the training of Polio Emergency Volunteers. The PEV's first were trained last year to assist physicians, nurses, and physical therapists in hospitals and homes by performing non-technical tasks, such as preparing "hot packs," certain aspects of bedside care, etc. They can be used under proper supervision to great advantage and save hours of service of professional personnel.

Epidemic Aid Units also can be of assistance to health authorities in determining the professional and volunteer personnel needed for the proper care of patients, and in setting up a complete plan for immediate and long-term patient care. Members of the units also assist in patient care during their stay in individual communities.

The duration of their service is approximately one week for the physicians and epidemiologist, and six weeks for the physical therapists and the orthopedic nurse. Members of the unit may be recalled for further consultation at a later date, if needed.

For more detailed information regarding the services of Epidemic Aid Units, consult the local Chapter of the National Foundation. There is a Chapter covering each of the counties of the United States.

#### THE SIGNIFICANCE OF PENICILLIN K

Medical Director J. R. Heller, Jr., Chief of the Venereal Diseases Division, U. S. Public Health Service, Washington, in response to recent inquiries has stated that in his opinion there is no occasion for alarm on the part of physicians who have used penicillin for syphilis or of patients who have been treated with it. He believes that penicillin as currently available and employed constitutes the best method of treatment yet devised.

According to Dr. Heller, commercially prepared penicillin contains not one but several penicillins known as G, X, F, and K. The Syphilis Study Section of the National Institute of Health has reported that penicillin K is relatively less valuable than the other penicillins in the treatment of syphilis and certain other diseases because it is rapidly destroyed in the body. The proportion of the element K in supplies of penicillin has not been great enough to reduce seriously the value of the drug in the treatment of syphilis or other diseases. Industry has already taken steps to reduce the K content of commercial penicillin and will apply further scientific information as soon as it becomes available. The relative effectiveness of G, X, and F has not yet been determined.

Penicillin has remained a complicated scientific problem since Medical Direc-

tor John F. Mahoney of the Public Health Service first demonstrated three years ago the curative value of the drug in syphilis therapy at the venereal disease research laboratory in Stapleton, N. Y.\*

Subsequently the Office of Scientific Research and Development sponsored coöperative studies with leading universities and other clinics throughout the country in an effort to determine the effects of drugs upon disease and the relative values of different methods of treatment. Since January 1, 1946, the Public Health Service has assumed complete responsibility for these studies in 40 clinics.

\* See Mahoney, John F., Arnold, R. C., and Harris, Ad. *Penicillin Treatment of Early Syphilis. A.J.P.H.*, 33, 12:1387 (Dec.), 1943.

#### SOUTHERN CALIFORNIA PUBLIC HEALTH ASSOCIATION

At its recent Annual Meeting, which was attended by more than five hundred public health workers, the Southern California Public Health Association elected the following new officers:

*President*—George M. Uhl, M.D., Los Angeles  
*President-elect*—Hubert O. Swartout, M.D., Los Angeles  
*First Vice-President*—Norman B. Nelson, M.D., Los Angeles  
*Second Vice-President*—Harrison Eilers, M.D., Long Beach  
*Secretary-Treasurer*—Ellarene L. MacCoy, M.D., Los Angeles  
*Assistant Secretary-Treasurer*—Meridian R. Ball, Sc.D., West Los Angeles

#### AMERICAN ASSOCIATION OF REGISTRATION EXECUTIVES

At a meeting in Chicago March 20-22, the Association elected the following officers:

*President*—L. E. Chancellor, Iowa  
*1st Vice-President*—Dr. Don Peterson, Tennessee  
*2nd Vice-President*—Dr. Arthur W. Hedrich, Maryland  
*Secretary-Treasurer*—Miss Billy Tober, New Mexico

## State Health Officers

1946

<i>Health Officer</i>	<i>Year Appointed</i>	<i>Health Officer</i>	<i>Year Appointed</i>
<b>ALABAMA</b>		<b>INDIANA</b>	
Burton F. Austin, M.D.,†	1942	Leroy E. Burney, M.D., M.P.H.,*	1945
State Health Officer, Montgomery		State Health Commissioner, Indianapolis	
<b>ARIZONA</b>		<b>IOWA</b>	
George F. Manning, M.D.,†	1941	Walter L. Bierring, M.D.,*	1933
State Superintendent of Public Health, Phoenix		State Health Commission, Des Moines	
<b>ARKANSAS</b>		<b>KANSAS</b>	
Thomas T. Ross, M.D., M.P.H.,†	1944	Floyd C. Beelman, M.D.*	1941
State Health Officer, Little Rock		Secretary and Executive Officer, State Board of Health, Topeka	
<b>CALIFORNIA</b>		<b>KENTUCKY</b>	
Wilton L. Halverson, M.D., Dr.P.H.,*	1943	Philip E. Blackerby, M.D.,*	1943
Director of Public Health, State Dept. of Public Health, San Francisco		State Health Commissioner, Louisville	
<b>COLORADO</b>		<b>LOUISIANA</b>	
Roy L. Cleere, M.D., M.P.H.,*	1935	David E. Brown, M.D.,†	1942
Secretary and Executive Officer, Division of Public Health, Denver		State Health Officer, New Orleans	
<b>CONNECTICUT</b>		<b>MAINE</b>	
Stanley H. Osborn, M.D., C.P.H.,*	1922	Roscoe L. Mitchell, M.D.,†	1939
State Commissioner of Health, Hartford		Director, State Bureau of Health, Augusta	
<b>DELAWARE</b>		<b>MARYLAND</b>	
Edwin Cameron, M.D., M.P.H.,*	1941	Robert H. Riley, M.D., Dr.P.H.,*	1928
Executive Secretary, State Board of Health, Dover		State Director of Health, Baltimore	
<b>FLORIDA</b>		<b>MASSACHUSETTS</b>	
Wilson T. Sowder, M.D., M.P.H.,†	1945	Vlado A. Getting, M.D., Dr.P.H.,*	1943
State Health Officer, Jacksonville		State Commissioner of Public Health, Boston	
<b>GEORGIA</b>		<b>MICHIGAN</b>	
T. F. Abercrombie, M.D.,	1917	William DeKleine, M.D., M.S.P.H.,*	1944
Director, Dept. of Public Health, Atlanta		State Health Commissioner, Lansing	
<b>IDAHO</b>		<b>MINNESOTA</b>	
Lawrence J. Peterson,*	1943	A. J. Chesley, M.D.,*	1921
Administrative Director, Dept. of Public Health, Boise		Secretary and Executive Officer, State Dept. of Health, St. Paul	
<b>ILLINOIS</b>		<b>MISSISSIPPI</b>	
Roland R. Cross, M.D.,†	1939	Felix J. Underwood, M.D.,*	1924
State Director of Public Health, Springfield		Executive Officer, Board of Health, Jackson	

\* Fellow A.P.H.A.

† Member A.P.H.A.

<i>Health Officer</i>	<i>Year Appointed</i>	<i>Health Officer</i>	<i>Year Appointed</i>
<b>MISSOURI</b>		<b>RHODE ISLAND</b>	
Robert M. James, M.D., State Commissioner of Health, Jefferson City	1945	Edward A. McLaughlin, M.D.,† State Health Officer, Providence	1935
<b>MONTANA</b>		<b>SOUTH CAROLINA</b>	
Burton K. Kilbourne, M.D.,* State Health Officer, Helena	1946	Ben F. Wyman, M.D.,* State Health Officer, Columbia	1944
<b>NEBRASKA</b>		<b>SOUTH DAKOTA</b>	
W. S. Petty, M.D., M.P.H.,* State Director of Health, Lincoln	1946	Gilbert Cottam, M.D.,† State Superintendent of Health, Pierre	1943
<b>NEVADA</b>		<b>TENNESSEE</b>	
Secretary, State Board of Health, Carson City		Robert H. Hutcheson, M.D., M.P.H.,* State Commissioner of Health, Nashville	1943
<b>NEW HAMPSHIRE</b>		<b>TEXAS</b>	
John S. Wheeler, M.D., M.P.H.,† State Health Officer, Concord	1946	George W. Cox, M.D.,† State Health Officer, Austin	1937
<b>NEW JERSEY</b>		<b>UTAH</b>	
J. Lynn Mahaffey, M.D.,† State Director of Health, Trenton	1931	William M. McKay, M.D.,† State Health Commissioner, Salt Lake City	1939
<b>NEW MEXICO</b>		<b>VERMONT</b>	
James R. Scott, M.D., Ph.D.,* State Director of Public Health, Santa Fe	1940	Charles F. Dalton, M.D.,† State Health Officer, Burlington	1912
<b>NEW YORK</b>		<b>VIRGINIA</b>	
Edward S. Godfrey, Jr., M.D.,* State Commissioner of Health, Albany	1936	I. C. Riffin, M.D. State Health Commissioner, Richmond	1934
<b>NORTH CAROLINA</b>		<b>WASHINGTON</b>	
Carl V. Reynolds, M.D.,* State Health Officer, Raleigh	1934	Arthur L. Ringle, M.D., C.P.H.,† State Director of Health, Seattle	1945
<b>NORTH DAKOTA</b>		<b>WEST VIRGINIA</b>	
George F. Campana, M.D., M.P.H.,* State Health Officer, Bismarck	1944	John Edward Offner, M.D.,† State Health Commissioner, Charleston	1943
<b>OHIO</b>		<b>WISCONSIN</b>	
Roger E. Heering, M.D., M.P.H.,† Director of Health, Columbus	1945	Carl N. Neupert, M.D., M.S.P.H.,* State Health Officer, Madison	1943
<b>OKLAHOMA</b>		<b>WYOMING</b>	
Grady F. Mathews, M.D.,† State Health Commissioner, Oklahoma City	1939	George M. Anderson, M.D.,† State Health Officer, Cheyenne	1944
<b>OREGON</b>		<b>Source:</b> Dates of appointment from A.P.H.A. correspondence, membership and fellowship records, <i>Who's Who in America</i> or <i>Who's Who in Medicine and Surgery</i> . If errors have crept in the Association will appreciate having them corrected.	
Harold M. Erickson, M.D., M.P.H.,* State Health Officer, Portland	1945		
<b>PENNSYLVANIA</b>			
Harry W. Weest, Jr., M.D.,† Secretary of Health, Harrisburg	1945		

## MAP STUDENT NURSE ENROLLMENT

The National Nurse Recruitment Committee, recently set up under the aegis of the National Nursing Council, rechristened itself the Committee on Careers in Nursing at its recent meeting and agreed upon the following purposes, directed toward both women and men students:

1. Enroll 40,000 new students in basic professional courses during the school year July 1, 1946, to July 1, 1947. The nationwide goal is above the 38,113 admitted in 1940, but more than 25,000 below the wartime peak of 65,521 admissions during the school year 1943-44.
2. Enroll graduate nurses in advanced courses to meet the demand of a growing national health program.
3. Enroll students in approved courses in practical nursing.
4. Stimulate the interest of college students in nursing as a career.
5. Help the public to understand that improvement in programs of education for nurses brings improvement in nursing service.
6. Encourage non-professional participation in enrollment activities in order to
  - a. Increase public awareness of the career opportunities nursing offers.
  - b. Stimulate interest in providing scholarships.

Edith H. Smith, Dean of the School of Nursing of Syracuse University, was elected chairman of the new committee. She brings to the work a year's experience as chairman of the wartime recruitment group.

While giving all possible thought and guidance on long-range problems, the committee realizes that in the immediate future it will be dealing with what continues to be an emergency situation, due to the fact that nurse shortages are still acute in many areas.

The committee will undertake to analyze overall problems and pass on to state groups any ideas or plans thought helpful. It is emphatic, however, in pointing out that state and local groups and schools will need to carry the major portion of enrollment activities, since funds available for

national efforts are much more limited than they were during the war years.

## CANCER RESEARCH GRANTS

The National Advisory Cancer Council of the U. S. Public Health Service within the last six months has made available nearly \$200,000 for cancer research. At the last 1945 quarterly meeting of the Advisory Council in December grants totaling \$42,000 to eight institutions were approved. At the March, 1946, meeting 13 grants-in-aid for cancer research totaling \$149,000 were approved. These grants are spread over 10 states and a variety of institutions—cancer research institutes, cancer hospitals, general hospitals, medical schools, and universities. They cover a wide range of subjects as well—nutrition in origin and growth of cancer, metabolic studies of gastric cancer, chemotherapeutic studies, consultation service in the diagnosis and treatment of tumors in childhood, and studies of Hodgkins disease, among others.

## FRANKLIN MEDAL TO DR. SHERMAN

Henry Clapp Sherman, Ph.D., Professor of Chemistry at Columbia University, received the Franklin Medal in ceremonies at Philadelphia on April 17. The award was granted "in consideration of his many contributions to the science of nutrition."

The Medal, founded in 1941, is bestowed annually on "those workers in physical science or technology, without regard to country, whose efforts have done most to advance a knowledge of physical science or its applications."

## SIXTY YEARS OF THE PHILADELPHIA VISITING NURSE SOCIETY

The Visiting Nurse Society of Philadelphia celebrated its 60th anniversary recently. The principal speaker at the anniversary dinner was the District of Columbia Health Commissioner, Dr.

George C. Ruhland, on the topic "Postwar Problems and Trends in Public Health." Ruth Hubbard, R.N., Director of the Society, recalling that it was one of the pioneer visiting nurse groups in the country, pointed out that many services, such as school nursing, that are now incorporated in the official health program of the community, had been inaugurated by the voluntary nursing agency.

#### DR. OLIN WEST RETIRES

The Board of Trustees of the American Medical Association, Chicago, has announced the retirement of Olin West, M.D., Secretary and General Manager of the American Medical Association for more than 23 years.

Dr. West, who was born in 1874, was graduated in 1898 from Vanderbilt University School of Medicine, Nashville, Tenn. After serving on the faculty of Vanderbilt for fifteen years, Dr. West became director for the Sanitary Commission of the Rockefeller Foundation in Tennessee. In 1918 he became Secretary and Executive Officer of the Tennessee State Board of Health. Four years later he became Field Secretary of the American Medical Association and later succeeded to the positions of Secretary and General Manager. He served as Secretary of the Tennessee State Medical Association and was Editor of its *Journal*.

George F. Lull, M.D., has been appointed General Manager of the Association effective April 1, succeeding Dr. West, and also Secretary of the Association until the next annual meeting to fill the unexpired term.

#### EARLY REPORTS OF THE MASSACHUSETTS STATE BOARD OF HEALTH AVAILABLE

One of the A.P.H.A. members has reports of the Massachusetts State Board of Health from 1870 (first annual report) through 1906; 1908 through 1914, 1916, 1918 through 1921.

Many of these reports, especially the earlier ones, are collector's items. The prospective donor is interested in placing them in a permanent depository, preferably in an educational institution or a health department library where they would be useful and appreciated, and he will make them available to such an agency without charge except for costs of transportation.

If you are interested, write to the American Public Health Association, 1790 Broadway, New York 19, N. Y.

#### COLONEL SHIELDS, BUFFALO HEALTH COMMISSIONER

Charles D. Shields, M.D., recently Colonel, MC, AUS, was appointed Health Commissioner of Buffalo, N. Y., in April. Colonel Shields had recently returned after 30 months' service overseas with the Army Medical Corps, his latest assignment as chief public health officer of Bavaria. He is a graduate of Georgetown University Medical School and Harvard University School of Public Health. He spoke on Buffalo's public health policies, problems, and programs at the April 23 stated meeting of the Erie County Medical Society.

Colonel Shields succeeded Dr. Francis E. Fronczak who retired at the age of 71 after 36 years as Buffalo Commissioner of Health. He has undertaken service with UNRRA as lecturer and organizer of public health services in Poland.

#### RESEARCH COUNCIL IN ANGLO-AMERICAN CARIBBEAN COMMISSION

Dr. Pablo Morales Otero of the Puerto Rico School of Tropical Medicine, in *Science* of April 12, 1946, writes of a unique international research group. In August, 1943, an advisory research council was established by the Anglo-American Caribbean Commission. Its objectives are to survey the needs of various communities and countries and to recommend needed research in

each, and to arrange for the exchange of results. The council is provided with a central secretariat.

The Research Council operates under five technical sections. The Public Health and Medical Section has been compiling vital statistics of the region, conducting nutrition surveys, standardizing wartime quarantine, and is promoting a congress on public health and tropical medicine for the analysis and discussion of public health problems common to the Caribbean countries.

The other committees are on: Agriculture, Nutrition, Fisheries, and Forests; Social Sciences; Industrial Technology; Building and Engineering Technology. The first named is making surveys of various agricultural products, those on sugar and livestock being well advanced. Also a Land Tenure Symposium and a Forest Research Meeting have already been held.

#### AMERICAN EPIDEMIOLOGICAL SOCIETY

At its meeting on April 13, the Association elected Dr. George H. Ramsey as President and Dr. Alexander D. Langmuir as Secretary-Treasurer.

#### N.T.A. RESOLUTION ON THE DEATH OF DR. RAVENEL

At a meeting of the Board of Directors of the National Tuberculosis Association held in Chicago on March 8 and 9, a resolution was adopted on the death of Dr. Ravenel:

"The Board has learned with deep sorrow of the death of Dr. Mazýck P. Ravenel on January 14, 1946. He was one of the founders of the National Tuberculosis Association and played a prominent part in the health field at a time when the new science of bacteriology was developing in the United States. He graduated from the Medical College of South Carolina in 1884 and later studied at the Pasteur Institute at Halle and Genoa.

"In 1895 he became the first Director of the Hygienic Laboratory of the New Jersey State Department of Health. He spent the years between 1896 and 1907 in Philadelphia,

teaching at the University of Pennsylvania, serving as bacteriologist for the Pennsylvania State Live Stock Sanitary Board and was Chief of the Laboratory of the Phipps Institute. In 1902 he demonstrated the transmissibility of bovine tuberculosis to man and spoke on this subject at the Sixth International Congress on Tuberculosis in 1908 at Washington, D. C.

"In 1914 he became Professor of Preventive Medicine and Medical Bacteriology, and Director of the Public Health Laboratory at the University of Missouri, where he remained until 1936. He edited an historical volume—*A Half Century of Public Health* for the American Public Health Association in 1921. He was the Editor-in-Chief of the *American Journal of Public Health* from 1924 to 1941. He served on the Board of Directors of the National Association from 1904 to 1918 and from 1933 to 1935.

"RESOLVED, That the Board hereby records its deep sorrow at the death of Dr. Ravenel and requests that a copy of this resolution be sent to the American Public Health Association and to members of his family."

#### PASSANO AWARD TO DR. GOODPASTURE

Dr. Ernest W. Goodpasture, Dean of the School of Medicine of Vanderbilt University, Nashville, Tenn., has received the 1946 Award of the Passano Foundation. The presentation was made in Baltimore on May 15 at a ceremony in Osler Hall of the Medical and Chirurgical Faculty of Maryland. On this occasion Dr. Goodpasture delivered an address on "Research and Medical Practice." The Passano Foundation was established in 1944 by the Williams & Wilkins Company, Medical Publishers, to "aid in any way possible the advancement of medical research, especially research that bears promise of clinical application."

The Award, consisting of \$5,000 in cash, was made for Dr. Goodpasture's "original development of the method for propagation of viruses in pure culture by inoculation of chick embryos and for his outstanding contributions to advancement of knowledge of the cell-parasite relationship in bacterial and virus infection."

Dr. Goodpasture also received the Sedgwick Memorial Award of the American Public Health Association in 1944, the Hober Medal of the Association of American Physicians in 1944, and the John Scott Award of the Philadelphia Board of City Trusts in 1946 for his work in the virus diseases.

#### GERIATRICS IN STATE HEALTH DEPARTMENT

The April Palmetto State *Health News* of the South Carolina Board of Health announces that the Executive Committee "has authorized the development of a program on geriatrics by the Division of Health Education, thus making South Carolina the second state to adopt this latest addition to the field of public health." According to the report, Indiana is the only other state that has recognized geriatrics as a function of the Health Department.

#### LASKER AWARD FOR 1946 IN THE FIELD OF MENTAL HYGIENE

The Lasker Award, presented annually for outstanding service in the field of mental hygiene, will be given this year for the most significant experimental investigation into behavior deviation, it was announced recently by Dr. George S. Stevenson, Medical Director of the National Committee for Mental Hygiene.

#### SCOTT AWARDS

On January 17, the John Scott Award, given by the Philadelphia Board of City Trusts, went to Dr. Ernest W. Goodpasture, Professor of Pathology and Dean of the Vanderbilt University School of Medicine, Nashville, Tenn., for his "development of a method for the cultivation of viruses that have made hitherto unknown vaccines possible."

Edwin J. Cohn, Ph.D., Professor of Biochemistry, Harvard Medical School, Boston, received a similar award for

developing "a substitute for dried blood plasma used in the treatment of shock in the war."

#### GRANT FOR TROPICAL DISEASE

The Marcelle Fleischmann Foundation has made a grant of \$20,000 a year for a 10 year period to the Department of Public Health and Preventive Medicine of Cornell University Medical College for the study of tropical disease. The specified purpose of the gift is to promote the study of immunologic and allergic manifestations of exotic diseases and to provide for a better understanding of their prevention and treatment. The investigations at Cornell will be under the direction of Morton C. Kahn, Sc.D., Associate Professor of Public Health and Preventive Medicine at Cornell.

The Marcelle Fleischmann Foundation is a philanthropy that has been founded recently by E. M. Fleischmann, Baltimore, in memory of his late wife.

#### DR. DARLING, YALE DIRECTOR OF MEDICAL AFFAIRS

Late in April President Charles Seymour of Yale University announced the appointment of George B. Darling, Dr.P.H., as Director of Medical Affairs. In this capacity Dr. Darling will correlate the university's interest in the Schools of Medicine and Nursing, the New Haven Department of Health and Grace-New Haven Community Hospital. This will "provide a greater efficiency in administration and a more equitable distribution of planning in the many approaches to health, including service, education, and research encompassed in the large Yale interests."

Between 1942 and 1945 Dr. Darling had been vice-chairman of the Division of Medical Science of the National Research Council and its Executive Secretary since 1945. Previously he had served for eight years with the



W. K. Kellogg Foundation in various capacities, most recently as President.

#### GUGGENHEIM CUP TO DR. RICHARDS

The 1946 William Guggenheim Cup, presented annually to some person who has brought distinction to the University of Pennsylvania, was awarded to Alfred Newton Richards, M.D., Vice-President of the university. The cup was presented in recognition of Dr. Richards' war services and especially his rôle in the production of penicillin. Dr. Richards has, since 1941, been Chairman of the Committee of Medical Research of the Office of Scientific Research and Development.

#### NATIONAL WELFARE ASSEMBLY

At a meeting in New York City on April 29, Charles P. Taft of Ohio was elected President of the newly organized National Social Welfare Assembly. In December, 1945, after more than a year of study and exploration, the members of the National Social Work Council, 25 year old forum group, made up of the executives of 30 national voluntary social welfare agencies, voted to reorganize and expand the Council to become the National Social Welfare Assembly.

On January 1, 1946, Robert E. Bondy resigned his post as Administrator of Services to the Armed Forces and Veterans, American National Red Cross, to become Director of the Assembly. David H. Holbrook, Executive Secretary of the National Social Work Council, remains with the Assembly in an executive capacity.

The stated purposes of the Assembly are, "To provide a means of consultation and conference on social welfare needs and problems. To provide leadership and facilities for affiliate social welfare agencies and associate groups of agencies and individual members to plan and act together in matters of common interest."

The Assembly already has a number of active committees. They include a Committee on Problems of Japanese-Americans, National Committee on International Social Welfare Organization, National Committee on Service to Veterans, and Surplus Property Committee.

The following are associate groups of the Assembly: American War Community Services, National Education and Recreation Council, National Health Council, National Social Case Work Council.

Its 40 affiliate organizations are:

- American National Red Cross
- American Public Welfare Association
- American Social Hygiene Association
- American Society for the Hard of Hearing
- Boy Scouts of America
- Boys' Clubs of America
- Bureau of Old Age and Survivors Insurance, Social Security Board
- Bureau of Prisons, Department of Justice
- Bureau of Public Assistance, Social Security Board
- Bureau of Research and Statistics, Social Security Board
- Camp Fire Girls
- Child Welfare League of America
- Community Chests and Councils, Inc.
- Council of Jewish Federations and Welfare Funds
- Family Welfare Association of America
- Girl Scouts
- National Association of Legal Aid Organizations
- National Board of the Young Women's Christian Associations
- National Child Labor Committee
- National CIO Community Services Committee
- National Conference of Catholic Charities
- National Council of the Young Men's Christian Associations
- National Federation of Settlements
- National Foundation for Infantile Paralysis
- National Jewish Welfare Board
- National Organization for Public Health Nursing
- National Publicity Council for Health and Welfare Services
- National Recreation Association
- National Safety Council
- National Society for the Prevention of Blindness
- National Travelers Aid Association
- National Tuberculosis Association

National Urban League  
 Office of Vocational Rehabilitation, Federal  
 Security Agency  
 Retraining and Reemployment Administration,  
 Department of Labor  
 The Salvation Army  
 United States Children's Bureau, Department  
 of Labor  
 United States Public Health Service, Federal  
 Security Agency  
 United States Public Housing Authority,  
 National Housing Agency  
 Veterans Administration

#### DR. HOOBLER WINS GARVAN MEDAL

Icie Macy Hoobler, Ph.D., Director of the Research Laboratory of the Children's Fund of Michigan has won the 1946 Francis P. Garvan Medal. Awarded annually by the American Chemical Society to outstanding women in chemistry, Dr. Hoobler won it for her studies of nutrition and the chemical processes of human growth. The medal will be presented at the Society's 110th Annual Meeting in Chicago in September.

#### MRS. TURNER EDITOR OF JOURNAL OF THE AMERICAN DIETETIC ASSOCIATION

On May 1, the American Dietetic Association announced the appointment of Mrs. Dorothea F. Turner as editor of the Association's *Journal*, succeeding Mrs. Mary P. Huddleson, who had served as editor for 18 years. Mrs. Turner is Assistant Professor at the University of Chicago School of Medicine and President of the Illinois Dietetic Association. She is also author of the Association's *Handbook of Diet Therapy*.

#### DR. BAUMGARTNER RECEIVES AMERICAN DESIGN AWARD

Leona Baumgartner, M.D., Director of the Bureau of Child Hygiene in the New York City Department of Health, received one of the 1946 American Design Awards of \$1,000 announced by Lord & Taylor on May 1. "During the war years she not only

maintained our pre-war standards of child health, but improved the program to such a point that today it is a model for the rest of the country." The award further described Dr. Baumgartner as "a woman whose design for living and whose understanding of people is profound and real."

Among those honored in the ninth annual awards of Lord & Taylor were Ruth Benedict, Ph.D., Professor of Cultural Anthropology at Columbia University; Ernest J. Bohn, Director of the Cleveland Metropolitan Housing Authority; and one institution, the New York State School of Industrial Relations at Cornell University.

The awards were established in 1937. They have never been static in nature, but have broadened from year to year, in the words of Miss Dorothy Shaver, President of Lord & Taylor. In 1944 four doctors were honored for their outstanding work in the rehabilitation of wounded service men, and in 1945 the scientists who headed the U. S. Government's wartime research program.

#### DR. COURTNEY SMITH NAMED AMERICAN RED CROSS MEDICAL DIRECTOR

National Headquarters of the American Red Cross in Washington, D. C., has announced that Courtney M. Smith, M.D., Dr.P.H., who has served the organization since 1944 as Deputy Medical Director and Director of Disaster Medical Service has been appointed Medical Director for the American Red Cross. Dr. Smith will succeed G. Foard McGinnes, M.D., Dr.P.H., who has recently been appointed Vice Chairman in charge of Health Services of the American Red Cross.

Dr. Smith is a graduate of the University of Oregon Medical School and holds the doctorate in public health from Yale. He has served in county and city departments of health in

Oregon, as health officer for the Territorial Department of Health in Alaska, and as a medical officer in the Office of Civilian Defence. During recent months he was on leave to the U. S. Public Health Service for work with the Army's Strategic Bombing Survey and did a four months tour of duty in Germany.

#### NEW OFFICERS OF A.P.H.A. AFFILIATED SOCIETIES

##### *Georgia Public Health Association—*

*President*—Abe J. Davis, M.D., Augusta

*President-elect*—Millard E. Winchester, M.D., Brunswick

*Vice-President*—Felix C. Pickron, Albany

*Secretary-Treasurer*—Louva G. Lenert, Atlanta

*Representative on A.P.H.A. Governing Council*—Louva G. Lenert

##### *Puerto Rico Public Health Association—*

*President*—Angel M. Marchand, M.D., Santurce

*President-elect*—Guillermo Arbona, M.D., Santurce

*Vice-President*—Guillermina Rivera-Valles, R.N., Santurce

*Secretary*—Nelson Biaggi, San Juan

*Treasurer*—Angeles Cebollero, Santurce

#### EYE-BANK FOR SIGHT RESTORATION ESTABLISHES CHICAGO BRANCH

Marking its first anniversary, The Eye-Bank for Sight Restoration, Inc., of New York, has announced the establishment of its first branch bank, to be located in Chicago.

The Chicago Branch will act as a way station for the reception and distribution of eyes throughout the Chicago area. After local needs are filled, surplus tissue will be sent to the New York bank for distribution there.

Mrs. Henry Breckinridge, Executive Director of the parent organization, pointed out that the demand for eyes still exceeds the supply, and that there is a long waiting list of people who might benefit by a corneal transplant. Research in blindness resulting from corneal damage, in new techniques of

corneal grafting, and in methods of preserving the eye tissue longer than the present limit of three days will also be an important part of the new project.

#### PHYSICAL RESTORATION PROGRAM

The Office of Vocational Rehabilitation, Federal Security Agency, announces the acquisition of five new medical officers to advance an expanding physical restoration program. Among them is Dr. Henry H. Kessler of Newark, N. J., outstanding authority on amputation and cineplasty. He will serve the Office of Vocational Rehabilitation as consultant in orthopedics and prosthetic devices.

#### PERSONALS

##### Central States

JOHN K. ALTLAND, M.D.,† of Hastings, Mich., Director of the Barry County Health Department for more than 5 years, has resigned, effective April 1, to become Director of the Bureau of Local Health Service of the Michigan Department of Health.

GEORGE M. BROTHER, M.D., Indianapolis, recently released from military service, has been placed in charge of a new Bureau of Preventable Diseases of the Indiana State Board of Health. The Bureau will include the Divisions of Tuberculosis Control, Venereal Disease Control, Industrial Hygiene, Dental Health, Adult Hygiene and Geriatrics, and Communicable Disease Control.

ALLAN A. FILEK, M.D.,† Madison, Wisc., has been appointed Supervisor of Local Health Services by the Wisconsin State Board of Health. He will also continue his duties as Director of the Tuberculosis Division until a qualified physician can be obtained to fill his former post.

LT. COL. G. HOWARD GOWEN\* has been appointed Chief of the Division of Cancer Control in the Illinois Department of Public Health, effective March 1.

#### CHANGES IN HEALTH PERSONNEL IN KANSAS:

THOMAS R. HOOD, M.D.,† Lawrence, has been assigned as full-time Health Officer of Cowley County, with headquarters in Winfield.

H. DALE PALMER, M.D., is Acting Director of the Sedgwick County unit during the absence of JOHN W. TURNER, M.D.,† who is taking graduate work in public health at the University of Michigan Medical School, Ann Arbor.

CHARLES M. FITZPATRICK, M.D., Salina, has been named Saline County Health Officer, succeeding GEORGE SEITZ, M.D.

EARL E. KLEINSCHMIDT, M.D., DR.P.H.,\* who recently has been released from the Army Medical Corps, has become the Director of the Tuberculosis Institute of Chicago and Cook County, Ill., and Professor of Public Health at the University of Illinois School of Medicine.

GEORGE S. MICHAELSON,† Chief Engineer of the Division of Industrial Health, Minnesota Department of Health, has been named Acting Director of the Division. LESLIE W. FOKER, M.D., Minneapolis, resigned December 1 as Director of the Division to enter private practice in the industrial field.

#### CHANGES IN HEALTH PERSONNEL IN MICHIGAN:

ROBERT R. SCOTT, M.D., Beulah, recently released from military service, has been appointed Director of the Mason County Health Department.

ROBERT L. LOFTIN, M.D., Cynthiana, Ky., who recently resigned as

Health Officer of Harrison County, is the new Health Officer of the Bay City-Bay County Health Department.

EDWARD F. FISHER, M.D., Dearborn, resigned the Presidency of the Dearborn City Council to become Director of the Dearborn Department of Health and Recreation.

HOWARD E. M. MILLER, M.A., Bloomington, Ill., has been appointed Executive Director of the Illinois Commission for Handicapped Children, effective March 1. The Commission is the official state agency responsible for promoting and coordinating both public and private health, welfare, education and vocational services for children who are physically or mentally handicapped.

CHARLES W. MYERS, M.D., Superintendent of the Indianapolis City Hospital, has been appointed Acting City Health Commissioner pending the appointment of a permanent successor to the late HERMAN G. MORGAN, M.D. He will continue at the hospital and be assisted in the health administration by GERALD F. KEMPF, M.D., Director of the Bureau of Preventive Medicine.

#### CHANGES IN HEALTH PERSONNEL IN NEBRASKA:

WALLACE S. PETTY, M.D.,\* Lincoln, Neb., Director of the Division of Local Health Services and Communicable Disease Control, has been named State Director of Health, succeeding CLAUDE A. SELBY, M.D.,† resigned.

ROLAND H. LODER, M.D.,\* Lincoln, Director of the Division of Maternal and Child Health, is on leave at the University of Michigan Medical School, Ann Arbor. Mich..

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

where he is completing work for his M.P.H. degree.

DONALD M. ALDERSON, M.D.,† Lincoln, Assistant Director, will be in charge during Dr. Loder's absence.

#### CHANGES IN HEALTH PERSONNEL IN OHIO:

ROBERT L. THOMAS, M.D., of Kinsman, O., was recently chosen Health Commissioner of Trumbull County.

CHARLES G. GOLL, M.D., of Stryker, O., has been appointed Health Commissioner of Williams County.

NELSON C. DYSART, M.D.,† recently resigned as Health Commissioner of Columbus.

HARRY M. WEAVER, PH.D., Senior Administrative Assistant and Assistant Professor of Anatomy, Wayne University College of Medicine, Detroit, has been named Assistant to the Medical Director of the National Foundation for Infantile Paralysis. Dr. Weaver's work will be with the Foundation's research program and fellowship training program for physicians and research workers.

#### Eastern States

ERNEST B. HOWARD, M.D.,† formerly Director of the Division of Venereal Disease Control of the Massachusetts Department of Public Health, has taken up duties as Chief of the Institute of Inter-American Affairs Health and Sanitation Field Party in Peru.

ROBERT P. KAMBLE, M.D., Mount Carmel, Pa., has been appointed Director of the Division of Mental Hygiene in the Westchester County Department of Health. He will organize and direct new Mental

Hygiene Clinics of the Health Department.

#### CHANGES IN HEALTH PERSONNEL IN NEW HAMPSHIRE:

MILDRED I. A. CHAMBERLIN, M.D., Acting Director of the Division of Maternal and Child Health and of the Division of Crippled Children's Services, State Department of Health, has resigned to return to private practice in Hillsboro.

CAPT. FREDERICK J. VINTINNER† has returned to his position with the Department as Director of the Division of Industrial Hygiene. Capt. Vintinner has been serving with the Sanitary Corps of the Eighth Service Command.

#### CHANGES IN HEALTH PERSONNEL IN NEW YORK STATE:

WILLIAM A. BRUMFIELD, JR., M.D., C.P.H.,\* Director of the Division of Syphilis Control, who has been on military leave since April, 1942, has returned and resumed his former position with the Department.

ROBERT L. VOUGHT, M.D., M.P.H.,† who has been on military leave since November, 1942, has been reinstated as District State Health Officer and assigned to the Rochester District.

ROBERT S. WESTPHAL, M.D., M.P.H.,\* District State Health Officer in the Rochester District, resigned his position with the Department effective May 4 to accept the position of Deputy Health Officer in the Rochester City Health Bureau.

EDWARD R. SCHLESINGER, M.D.,† Assistant District Health Officer in the Syracuse District, was appointed Acting Director of the Division of Maternity, Infancy and

\* Fellow A.P.H.A.

† Member A.P.H.A.

Child Hygiene. He succeeds HELEN H. OWEN, M.D.,† who retired on April 15, after 23 years' service with the Department.

JOHN A. DEGEN, JR., M.D., who recently returned from military duty with the U. S. Army, was provisionally appointed Assistant District Health Officer and assigned to the Syracuse District.

DAVID E. BIGWOOD, JR., M.D.,† Assistant District Health Officer in the Hornell District since 1940, resigned his position with the Department to accept the position of Health Officer of the City of Utica.

WILLIAM E. MOSHER, JR., M.D., M.P.H.,\* who has been on military leave since November, 1943, has returned and has been reinstated as Commissioner of Health of Cortland County.

A. F. DAPPERT, Principal Sanitary Engineer in the Division of Sanitation, who has been on military leave since August, 1943, was separated from the service as Lieutenant Colonel and has resumed his former position with the Department.

### Southern States

WILLIAM B. ATKINSON, M.D., of Campbellsville, Ky., formerly State Medical Officer for Selective Service, has been named Acting Director of a newly created Division of Medical and Related Services in the Kentucky State Department of Health. The first activity of the Division is to be a survey of hospital and nursing facilities.

S. J. AXELROD, M.D.,† Surgeon (R), U.S.P.H.S., has been appointed Chief of the Health Services Division, Labor Branch, U. S. Department of Agriculture. As part of the federal farm labor program, the Labor Branch administers a health services

program, including medical and dental care and hospitalization for migratory farm workers and their dependents and for imported farm workers under contract to the Department of Agriculture.

JOSEPH E. BARRETT, M.D., of Marion, Va., Superintendent of the Eastern State Hospital, Williamsburg, has been appointed Commissioner of the Virginia State Department of Mental Hygiene and Hospitals. He succeeds HUGH C. HENRY, M.D., who died October 14. Dr. Barrett was formerly Director of the Michigan State Hospital Commission and Assistant Commissioner of the Massachusetts Department of Mental Hygiene.

JOHN W. FERREE, M.D.,\* has been appointed Director of the Division of Education and Special Projects of the American Social Hygiene Association at their Washington, D. C., Liaison Office, effective March 1. Dr. Ferree has been on active duty for 3½ years as a Naval Reserve commissioned officer and for the past year, he has been in charge of the Venereal Disease Control Section, Division of Preventive Medicine, Bureau of Medicine and Surgery, with headquarters in Washington.

JOSEPH P. FRANKLIN, M.D., Cumberland, Md., who has been on military leave since February, 1941, has returned as Deputy State and County Health Officer of Allegany County.

O. M. GOODLOE, M.D.,† who has served as Director of the Medical and Health Section of the Eastern Area, American Red Cross, Alexandria, Va., has resigned to become Commissioner of Health in Columbus, O., and Associate Professor in the Ohio State University Medical School.

CARL A. F. HOLLER, M.D.,† Fort Payne, Ala., has resigned as Health Officer of DeKalb County to accept a similar position in Etowah County

with headquarters in Gadsden, effective February 1.

EDWARD M. HOLMES, JR., M.D.,\* of Richmond, Va., has recently been released from the army and has resumed his position as Director of the Division of Venereal Diseases in the Virginia State Department of Health.

JOHN M. HUFF, M.D., has been appointed Superintendent of Public Health of Norfolk, Va., in a newly created separate Department of Public Health which has been set up, effective March 15.

#### CHANGES IN HEALTH PERSONNEL IN KENTUCKY:

WILLIAM F. LAMB, M.D., Russellville, recently returned from military service, has been appointed Director of the Division of Venereal Disease of the State Department of Health.

WAYNE L. RITTER, M.D., Louisville, on leave from the U. S. Public Health Service, has resigned as Director of the Bureau of Industrial Hygiene. W. W. STALKER is currently Acting Director of the Division.

CHARLES E. TUCKER, recently released from military service, has been named Educational Director of a new Cancer Control Program inaugurated by the State Department of Health in cooperation with the Kentucky Field Army of the American Cancer Society.

GEORGE E. LACY, M.D., Chattanooga, Tenn., has been appointed Director of Venereal Disease Control for Miami and Dade County, Fla., effective February 8.

#### CHANGES IN HEALTH PERSONNEL IN MARYLAND:

ISAAC N. KING, M.D., Deputy State and Health Officer of Calvert County, resigned February 1,

ending some 44 years of service with the State Department of Health. He has been succeeded by Hugh W. Ward, M.D.,† of Owings, Md.

EDWARD DAVENS, M.D.,† Baltimore, has been reinstated as Chief of the Bureau of Child Hygiene, State Department of Health.

ARTHUR M. SHELAMER, M.D.,† of Athens, Ala., has been appointed Health Officer of Madison County. MAURICE M. DUNCAN, M.D., Huntsville, has been serving in the position since WILLIAM C. HATCHETT, M.D., resigned to join the Florida State Department of Health.

CHARLOTTE SILVERMAN, M.D., M.P.H.,† after serving recently in several federal agencies, has become Assistant Director of the Bureau of Tuberculosis in the Baltimore City Department of Health.

LT. COL. SAMUEL R. TAGGART has been recently appointed Director of the Venereal Disease Bureau of the District of Columbia Health Department, filling the vacancy that occurred when FREDERICK G. GILLICK, M.D.,† resigned last August to accept a position with the U. S. Public Health Service in Philadelphia. During the interim, BENJAMIN D. CHINN, M.D., Director of Clinical Work for the Bureau, has been Acting Chief.

MARTIN D. YOUNG, Sc.D., Major (R)† in Charge of the Malaria Investigations, National Institute of Health, Columbia, S. C., was named President-Elect of the Association of Southeastern Biologists at the annual meeting in Columbia, April 19-20.

#### Western States

PATRICK KELLEY has been appointed Executive Secretary of the San Fran-

\* Fellow A.P.H.A.

† Member A.P.H.A.

cisco Tuberculosis Association, replacing PAUL NEIMAN,† who resigned recently.

NORMAN NELSON, M.D.,† has been appointed Chairman of a new Department of Public Health in the University of California, at Los Angeles. The department is part of the over-all University School of Public Health at Berkeley.

#### CHANGES IN HEALTH PERSONNEL IN OREGON:

DONALD J. BOURG, M.D.,† has resigned as Director of the Division of Maternal and Child Health.

DANIEL C. KELLEY, M.D., formerly of Lawrenceville, Ga., has been appointed Health Officer of Clatsop County.

RICHARD WILCOX, M.D., of Pendleton, recently returned from military service, has been reinstated as Health Officer of Umatilla County.

PAULINE G. STITT, M.D.,† Assistant Director of the Bureau of Maternal and Child Health and Crippled Children in Hawaii, has resigned to become a Regional Medical Consultant of the U. S. Children's Bureau for the Southeastern Section of the United States.

BERNARD WITLIN, Sc.D.,† Acting Director of the Bacteriologic Laboratories of the Hawaii Board of Health, has resigned to accept a position with the Ohio State Health Department in Columbus, O.

#### Foreign

JOAO DE BARROS BARRETO, M.D., who recently resigned as Director General of the National Department of Health, Brazil, has returned from Washington, D. C., where he was the representative of Brazil at the last meeting of the officers of the Pan American Sanitary Bureau. Dr. Barreto is now Director of the

Division of Hygiene of the Oswaldo Cruz Institute of Rio de Janeiro.

SIR WILLIAM OGILVIE, London, has been appointed Editor of the *Practitioner*, to succeed Dr. ALAN A. MONCRIEFF who has resigned on his appointment to the Nuffield Professorship of Child Health at the University of London.

#### CONFERENCES AND DATES

American Congress of Physical Medicine—24th Annual Session. Hotel Pennsylvania, New York, N. Y. September 4-7.

American Dietetic Association—28th Annual Meeting. Netherlands Plaza, Cincinnati, O. October 14-18.

American Home Economics Association. Cleveland Public Auditorium, Cleveland, O. June 24-27.

American Hospital Association—48th Annual Convention and Post-war Conference. Philadelphia, Pa. Week of September 30.

American Medical Association. San Francisco, Calif. July 1-5.

American Nurses Association, National Organization for Public Health Nursing, National League of Nursing Education—Biennial Nursing Convention. Atlantic City, N. J. September 23-26.

American Public Health Association—74th Annual Meeting. Cleveland, O. November 12-14.

American Public Welfare Association—Northeastern Regional Meeting. Branford, Conn. June 20-21.

American Public Works Association—Public Works Congress. Fort Worth, Tex. September 22-25.

American Water Works Association—New Jersey Section—Filtration Plant, Passaic Valley Water Commission, Little Falls, N. J. June 28.

Michigan State Medical Society—81st Annual Session. Book-Cadillac Hotel, Detroit, Mich. September 25-27.

National Committee for Mental Hygiene—Annual Meeting. Hotel Pennsylvania, New York, N. Y. October 30-31.

National Education Association. Buffalo, N. Y. July 1-5.

New York State Association of Health Officers and Public Health Nurses—Annual Conference. Grand Union Hotel, Saratoga Springs, N. Y. June 25.

New York State Association of School Physicians—Annual Meeting and Conference. Saratoga Springs, N. Y. June 24.



necessary. The result of this and other reports paved the way for legislation on the subject, and in 1906 the Education (Provision of Meals) Act gave power to local education authorities to provide for the systematic medical inspection of all children attending public elementary schools, and empowered them, with the sanction of the Board of Education (now Ministry of Education), to make arrangements for attending to the health and physical condition of such children. In order to facilitate the necessary organization, central and local, the Board of Education established a Medical Department.

An extract from a circular issued by the Board at that time sets out the objects of the new service:

The aim of the Act is practical and it is important that local education authorities should keep in view the desirability of ultimately formulating schemes for the amelioration of the evils revealed by medical inspection, including, in centres where it appears desirable, the establishment of school surgeries or clinics, such as exist in some cities of Europe, for further medical examination or the specialized treatment of ringworm, dental caries, or diseases of the eye, the ear, or the skin. It is clear that to point out the presence of uncleanness, defect, or disease does not absolve an authority from the consequent duty of so applying its statutory powers as to secure their amelioration and to prevent, as far as possible, their future recurrence of development. The authorities should take measures without delay for dealing, through such agencies as are conveniently available, with what are commonly, though in a sense erroneously, regarded as minor ailments. To such ailments measures of amelioration should immediately be applied.

The earlier years of the school medical service were devoted mainly to securing the establishment of medical inspection. This revealed an enormous amount of disability due to defective eyesight, decayed teeth, enlarged tonsils and adenoids, uncleanness and a number of so-called "minor ailments." Although the tendency in the early stages was to make full use of the

voluntary hospitals, care organizations, and private practitioners for treatment, it became increasingly apparent that, on account of the poverty of the parents or lack of facilities, many children were unable to get the attention they required. The education authorities therefore found it necessary to make arrangements for providing certain forms of treatment, the parents being required to contribute to the cost of that treatment according to their means.

A stimulus to the expansion of these services was given in 1913, when Exchequer grants amounting to approximately 50 per cent of their cost were made to local education authorities. Since then progress has been steady and consistent. The Education Act of 1918 made, what had been hitherto a power, a duty to provide certain forms of treatment, e.g., for minor ailments, defective vision, dental disease, enlarged tonsils and adenoids, but most authorities in course of time enlarged the scope of their services far beyond the bounds of that laid down by statute. The Education Act of 1944 went a stage further in putting a duty on local education authorities to provide or otherwise secure all forms of medical treatment for children in schools maintained by them, with the exception of treatment in the pupil's home and certain forms provided by other public medical services, e.g., infectious disease, tuberculosis. Such treatment must be given without cost to the parents. The medical sections of the Education Act, 1944, anticipate to a certain extent the provisions which will be made under the National Health Service Bill which is shortly to go before Parliament.

#### ADMINISTRATION

It should be emphasized that the school health service does not work in isolation but is integrated with the other public medical services of the area. Such are the maternity and child wel-

fare service (with responsibility for the health of children under school age), the service for the control and treatment of infectious disease, the hospital service, the tuberculosis service, and the general public health service. The school health service is controlled centrally by the Ministry of Education, locally by the local education authorities; the other services mentioned are controlled centrally by the Ministry of Health, locally by the public health authorities.

#### *Central administration*

Under the Act which established the Ministry of Health in 1919, the powers and duties of the Board of Education with respect to medical inspection and treatment of children and young persons were transferred to the new Minister of Health. This was done in order to secure proper integration of the various health services. It was provided, however, that the Minister of Health could arrange for delegation of these functions to the Board of Education and this was in fact done.

The Chief Medical Officer of the Ministry of Health is also Chief Medical Officer of the Ministry of Education, and in this way the medical work of the two central departments is coördinated. Under the Chief Medical Officer are a Senior Medical Officer, a Deputy Senior Medical Officer, and a number of medical officers whose services are confined to the Ministry of Education. Their duties are mainly advisory. They visit from time to time the areas of local education authorities, review the adequacy of the school health service arrangements (including the special schools), and report their findings to the Ministry which, in the light of information received, may make recommendations for the improvement or expansion of the education authorities' services. Since the cost of these services is borne partly by the Ministry,

i.e., out of Exchequer grants, and partly by the local authority, i.e., out of local rates, the local education authorities do not have to shoulder the whole financial burden of putting the Ministry's recommendations into effect.

#### *Local administration*

The local administration of the education services, including the school health service, is carried out by the education authorities of 63 counties (e.g., Middlesex, Lancashire) and 83 county boroughs (e.g., Liverpool, Manchester). Each local education authority is required to appoint a school medical officer. In all areas, with the exception of three county boroughs, the school medical officer is also medical officer of health. The policy of making joint appointments of this kind has the full support of both the Ministries of Health and Education, in order to bring about the integration of the school health service with the other public medical services administered through the medical officer of health by the public health authorities of the areas.

On the staff of the school medical officer are a deputy, or senior school medical officer, and a number of assistant school medical officers. Though the deputy or senior school medical officer may devote his whole time to the school health service, the assistants for the most part work under both the education and public health authorities. The specialists' staff, which include ophthalmic surgeons, aurists, orthopedic surgeons, and others, are usually engaged in a part-time sessional basis. They frequently have duties also under the public health authorities, e.g., for the treatment of children under school age.

The dental services are staffed by a senior dentist, who is responsible to the school medical officer for the organization, development and technical

efficiency of the school dental service, and a number of assistant dentists. The nursing staff consists of a number of nurses under a senior or nursing superintendent. These, for the most part, act as school nurses under the education authority and as health visitors under the public health authority, and a Regulation recently made under the Education Act, 1944, is to the effect that every nurse to be appointed by the education authority for the purpose of the school health service shall possess the qualification prescribed for a health visitor (public health nurse in America). The coördination of the activities of these various members of the staff, and the general administration of the school health service, is the responsibility of the school medical officer.

#### INSPECTION

The basis of school medical work is founded on a system of medical examination of children of specified age groups. These were till recently at the age of entry to school, usually 5, at 8+, and at 12. Regulations made under the Education Act, 1944, have altered the previous requirements, and children must now be inspected as soon as possible after entry to school, in the last year of attendance at a primary school, i.e., at 10+, and during the last year of attendance at a secondary school, i.e., for the majority at 13+ (until the school leaving age is raised to 15), and on such other occasions as the Minister may from time to time direct or the authority, with the approval of the Minister, may determine. Under these new regulations the system of inspection is made more elastic and allows authorities to experiment and vary their arrangements to meet their local circumstances, while they maintain certain minimum requirements. The inspection, which takes place in the school, is conducted by a school medical officer and includes an examination of the

respiratory, circulatory, nervous, digestive, and muscular systems, and the special senses. In addition to these so-called "routine inspections," the medical officers carry out a large number of examinations of children specially referred to them by teachers, parents, or school nurses, and all reëxaminations of children who, at a previous inspection, were found to be suffering from illness or defect. The number of routine and special examinations per annum in pre-war years amounted to approximately 60 per cent of children in average attendance at the elementary schools.

#### *The school nursing service*

The school nurse plays an essential part in the school health service. She acts as a liaison officer between the medical officer, the school, and the home. She visits the homes of children found to be in need of treatment, advises parents on the need for and how to obtain medical attention, and continues to keep in touch with the family until the condition is remedied. An important though thankless duty is that of examining children for verminous conditions and by advice to the parents or by more drastic measures bringing about a reform. The employment of women in war factories has inevitably caused a relaxation in parental care. This has led to substantial increase in verminous conditions and parasitic diseases during the war years. They are now being got under control, largely due to the energy of the school nurses who were substantially helped during war-time by organizations such as first-aid posts and decontamination stations. Apart from these setbacks due entirely to war conditions we can, taking a long view, see an enormous improvement over the past twenty-five years in the cleanliness of the clothes, bodies; and heads of children in our state schools.

## TREATMENT

While all pupils must be submitted for inspection, the parent is free to decline the offer of treatment. The nucleus of the treatment service is the school clinic, which is often in the same building as other public medical services, e.g., the maternity and child welfare service. Arrangements for the treatment of the following conditions are made by all authorities:

Minor ailments, including diseases of the skin  
Diseases of the eyes and defective vision  
Diseases of the ear, nose, and throat, and defective hearing  
Dental diseases

Treatment of diseases and defects of the special sense organs is, as far as is practicable, undertaken by specialists.

Dental treatment is carried out by dentists. A comprehensive school dental service provides for the annual examination of every child and treatment when required. Few authorities were able to achieve this even before the war, but the school dental service was formerly one of the most actively expanding branches of school medicine, and there is no doubt that expansion will now be resumed.

Authorities have been given considerable latitude in the past in developing their schemes for medical treatment over and above the statutory requirements. A few may be mentioned.

*Orthopedic work*

One branch of the school medical service which owes its development largely to medical progress during the 1914-1918 war is orthopedic treatment. Arrangements for orthopedic treatment are made by the majority of local education authorities. These are based on in-patient treatment at orthopedic hospital schools where, as treatment is often very prolonged, arrangements for the education of children are made. In-patient treatment is followed

up by outpatient treatment at orthopedic centers which are staffed by visiting orthopedic surgeons and trained orthopedic nurses. Here, as well as the more serious cases of crippling, are treated minor conditions of deformity and postural defects.

*Child guidance*

Although many authorities have had to cut down their school medical work during the war years, certain branches of the work have undergone considerable expansion. A notable example of this is child guidance. The war gave rise to numerous circumstances likely to lead to psychological disturbances in children. Evacuation, with the placement of the child in an unfamiliar environment, the break-up of family life and with it the relaxation of parental control produced a sense of insecurity in children which manifested itself in symptoms of maladjustment. The problems of billeting children who were under psychological strain led many of the receiving authorities to establish a child guidance service, primarily for evacuees, but also available for local children. Many such services established to meet war emergencies will remain permanently. In the cities much attention was paid to the emotional disturbances in children caused by wartime conditions, particularly by the "blitz." It is satisfactory to record that the results of inquiries on the effect of air raids on children are reassuring, and that, taking the child population as a whole, it has stood up to aerial bombardment with its accompanying terrors with the same courage and fortitude displayed by the civilian population generally.

*Treatment of speech defects*

This is another branch of the service which has expanded during recent years. Children attend special clinics two or three times a week to receive

treatment by a qualified speech therapist who works in close coöperation with the medical staff.

### *Miscellaneous clinics*

These include clinics for rheumatic children, for children with defects of nutrition, for children needing orthoptic treatment for squint, and a recent provision which it is hoped will be widely developed in the future is the establishment of clinics under consultant pediatricians.

Such are the main forms of treatment provided under the school health service. The scope and comprehensiveness of the arrangements necessarily vary from one area to another. Under the Education Act, 1944, education authorities must provide or otherwise secure fully comprehensive arrangements for treatment, though the expansion of the treatment services in the future must go hand in hand with the development of the new National Health Service.

### SPECIAL EDUCATIONAL TREATMENT FOR PHYSICALLY OR MENTALLY HANDICAPPED PUPILS

There are a considerable number of children of school age who suffer from physical or mental defects which render them unable to take advantage of the ordinary means of education, and make it necessary that special educational facilities should be provided for them. Such children fall into the categories of the blind, the deaf, the mentally defective (now termed "educationally subnormal"), the physically defective, and the epileptic. It is the duty of the local education authorities to ascertain the children in their areas who belong to these categories and to make suitable provision for their education.

The beginnings of the provision of special educational facilities for blind, deaf, defective, and epileptic children were due to voluntary efforts and, while nearly all the existing day special

schools are provided by local education authorities, more than half of the residential special schools are provided by voluntary bodies. Thus the voluntary schools still fill an important place in the special school system and they receive financial support by direct grants from the Ministry and by contributions made by the local education authorities and other public authorities who send children there.

The Education Act, 1944, increases the number of categories of handicapped children, but at the same time enables the methods of educating them to be made more elastic. Prior to the new Act, once a child was "ascertained" as being handicapped, from a strictly legal point of view he could be educated only in a special class or school. In recent years, with the greater elasticity in the organization and curriculum of the ordinary schools, it has been possible to educate within these schools many children suffering from defects which formerly could only be dealt with in the so-called special schools. Under the 1944 Act children, who though handicapped, can with suitable adjustments in the ordinary school curriculum receive benefit from the education given there and compete successfully with their fellow pupils, may be educated in the ordinary school.

It is recognized that children with defects of certain types and certain degrees of severity must be educated in special schools. Such are blind, deaf, severely crippled, or epileptic children, but others such as partially-sighted, partially-deaf, maladjusted, all of which are new additions to the categories of handicapped children under the Education Act, 1944, and educationally subnormal need not necessarily be sent to a special school. Some of these can receive education in the ordinary school if suitable arrangements are made. Others, however, because of the severity of the handicap,

or of environmental circumstances, must be sent to special schools.

Broadly speaking, the present provision of special schools for blind and deaf is adequate. A certain number of the severe types of partially-sighted and partially-deaf are educated in blind or deaf schools respectively, but it is an arrangement which educationalists in this country do not favor. It is hoped that, with a national reorganization plan for schools for the blind and deaf which is now being undertaken, it will be possible to make arrangements by which those partially-sighted and partially-deaf children who need a special education should receive it in schools dealing exclusively with these types of defect.

Provision for other types of handicapped pupils is insufficient. For example, the special school accommodation for educationally subnormal children is far below what is required. It is estimated that in England and Wales as a whole some 23,000 children who are educationally subnormal require residential care. At present the accommodation available is approximately 3,000 places. It is satisfactory to note, however, that authorities, in spite of present-day difficulties with regard to acquisition of premises and obtaining building labor for non-priority work, are taking active steps in providing special accommodation for this type of child. Before the war the expansion in special school provision was mainly for delicate children. These are sent to open-air schools; either day or residential, which provide, in addition to open-air life, an adapted curriculum and facilities for meals, rest, and bathing.

It has been recognized in recent years that education is an important adjunct to the medical treatment of a child in hospital. Educational facilities for children under long-term treatment in orthopedic hospitals, sanatoria for pulmonary tuberculosis, or institutions for the treatment of rheumatism

or heart disease, have been provided for many years, but the tendency recently has been to introduce such arrangements into ordinary children's hospitals or the children's departments of general hospitals. The Emergency Medical Service, which during the war administered the general hospital service of the country, appointed teachers in all their hospitals which had more than twenty children staying for a period of more than two or three months.

#### HEALTH EDUCATION

Ever since the inauguration of the school medical service the Ministry have emphasized the importance of the teaching of hygiene in all types of schools. The teaching of hygiene is a compulsory subject for all students in training colleges for teachers. It is held, however, that this aspect of the health services of the local education authority is educational rather than medical, and the instructions should, as a rule, be given by the school teachers though close coöperation with the school medical officers. In order to give the subject of hygiene a fairly well defined context and to bring it within the compass of school teaching, the Ministry have issued a *Handbook of Suggestions on Health Education*. This handbook points out that hygiene could be taught by three methods—(a) by habit training, (b) by learning the truths of biology, chemistry, and physics, and (c) by understanding the principles and practice of good living itself, and gives detailed suggestions for the application of these methods to children of various ages. While the provision made for the teaching of this subject is still far from complete, there is evidence of a growing recognition of its importance, and of an appreciation of the burden of disease and incapacity in adult life which may result from the failure to acquire and practise healthy habits of living in childhood.

APPENDIX  
Statistical Tables

(1)	<i>No. of children on registers, October, 1945</i>	
	Primary and Secondary Schools.....	5,022,068
(2)	<i>Staff of School Health Service</i>	
	(a) School Medical Officers and Assistant School Medical Officers, 1942	
		the equivalent of 724 whole-time officers
	(b) No. of Specialists (nearly all on a part-time basis), 1938	
	(i) Ophthalmic surgeons .....	418
	(ii) Aural surgeons .....	236
	(iii) Orthopedic surgeons .....	147
(3)	<i>Number of Medical Inspections, 1944</i>	
	(a) Routine .....	1,305,608
	(b) Special and re-inspections .....	2,766,850
(4)	<i>Treatment, 1944</i>	
	(a) No. of defects treated	
	(i) Minor ailments .....	1,281,898
	(ii) Defective vision and squint.....	245,402
	(iii) Nose and throat .....	90,104
	(b) Dental treatment	
	(i) No. of children treated .....	1,246,864
	(ii) Percentage of children inspected who required treatment..	58.6
	(iii) Percentage of children requiring treatment who received it..	66.5
(5)	<i>Nursing Service, 1944</i>	
	(i) No. of examinations for verminous conditions.....	14,182,587
	(ii) No. of children found unclean.....	502,348
(6)	<i>Finance; expenditure by Local Education Authorities, 1941-1942</i>	
	(i) Medical inspection and treatment .....	£2,679,023
	(ii) Special schools .....	£1,957,923

# Penicillin and Streptomycin\*

THEODORE G. KLUMPP, M.D.

*President, Winthrop Chemical Company, New York, N. Y.*

THE practice of public health has undergone more radical changes in subject matter and scope in the last decade than perhaps in any similar period in the history of this country. Isolation, quarantine, sanitation, immunology, and epidemiology are still important but the increasing involvement of chemotherapy, antibiotics, engineering, and chemistry is having an influence on the panorama of public health, the import of which is even now not fully evident.

The pharmaceutical industry has joined the public health service. Its cards of admission have been the arsenicals, antimony compounds, atabrine, the sulfa drugs, penicillin, DDT, workers' health and insurance programs, and now streptomycin. It has other cards up its sleeve. The public health services will realize their fullest effectiveness only when industry furnishes more weapons with which to fight.

The development of penicillin is a remarkable chapter in the history of science. It is marred only by the lag of 12 years between the discovery of its effect and its availability as a drug while untold thousands perished for want of it. This reveals a serious shortcoming in the mobilization and development of medical science. We must see to it that we never again wait so long for laboratory discoveries to bear fruit.

Late in 1942, when commercial production of penicillin got under way, a

few units were turned out, insufficient for even experimental purposes. In 1945 production reached the level of almost 700 billion Oxford units per month. A total of 6,912 billion units was produced in 1945, enough to treat more than 7 million cases, assuming an average of slightly less than a million units per case, and yet the product is so concentrated and so highly refined that the amount of pure penicillin produced amounts to only 9 pounds a day. J. A. Krug, recently Chairman of the War Production Board, characterized the production of penicillin and DDT as "perhaps the most amazing production stories of the war."

Production of penicillin is steadily increasing and we may expect a successively greater output each month. The amount now available is just about adequate to meet American requirements and most of the world's needs. Recent reports from parts of the United States indicated an unusually high incidence of respiratory infections. Many of these cases appeared to resemble a mild form of influenza. It recently seemed entirely possible that we might have a severe influenza epidemic in the making, with its aftermath of pneumonia and other respiratory infections. If this should occur, and we earnestly hope it will not, the amount of injectable penicillin available may not be sufficient to meet all requirements. Manufacturers and public health authorities are watching the situation closely. If anything serious develops it may be necessary to curtail

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production of various pharmaceutical preparations of penicillin and concentrate on the more economical and effective parenteral forms of the drug.

It is easy to assume that war was responsible for the remarkable acceleration of production of penicillin. This is probably true to some extent. But it is not altogether clear that the help given by the government did more than serve to overcome the handicaps, shortages, and restrictions of a wartime economy. Prior to the war American production programs for prontosil, sulfanilamide, sulfathiazole, and sulfadiazine were equally prompt in meeting the health needs of the world. Great Britain, which was equally aware of the importance of penicillin, is only now producing substantial amounts of penicillin with the help of American engineers and American designs for plant installations. Perhaps it was largely the fact that we were in the war to a less extent than England that we were able to do so well. In other words, it seems to me that we should be cautious in jumping to the conclusion that only under the stimulus of war can we put forth our best efforts. The pharmaceutical industry is now engaged in a large program of production of streptomycin. While it is confronted with unrelieved shortages and delays carried over from the war, we shall have another opportunity of seeing whether the dragon of war or the dove of peace is the more potent stimulus to scientific progress.

Organic chemists throughout the country have worked energetically for almost three years on a collaborative program under the auspices of the National Research Council in the hope of synthesizing penicillin. The goal is still a long way off, and may never be reached. In the meantime, the mold *Penicillium notatum* has been taught to do this complicated job of synthetic chemistry for us so cheaply that organic

synthesis can probably never hope to compete with it. This is truly an example of cheap labor, and one which leaves man's efforts in the rôle of a hoped for academic accomplishment.

Medical men and even the public are familiar with the nature of the infections for which penicillin is useful. An enumeration of them would therefore be superfluous. However, there are a number of recent developments that may be worth mentioning. The early hope that penicillin would destroy the spirochete of syphilis and eliminate the infection in all cases has not been realized. While it has proved to be extraordinarily valuable in many cases, relapses have been not uncommon, and in many cases of central nervous system syphilis it has been unavailing. Penicillin as we now use it is not the final answer to the syphilis problem. But with better public health measures to detect and perhaps to compel treatment of early syphilitic infections, it will go a long way toward reducing the terrible consequences of this serious disease.

It is a long step to turn from a disease as serious as syphilis to the common cold. Perhaps it is paradoxical that the discoverer of the most important agent against infections should be depicted as suffering from a cold to such an extent that he could hardly receive his Nobel award at the ceremonies in Stockholm. There is no question but that the common cold with its aftermath of secondary infections is one of the most serious causes of disability and chronic illness. All available evidence indicates that it is not the virus phase of the common cold but the secondary bacterial infection that is the chief culprit. The organisms responsible for these secondary infections are, with perhaps one exception, highly susceptible to the action of penicillin. Do we have in penicillin, particularly in the form of sprays and oral dosage, an agent

for suppressing secondary infections and their sometimes irreversible tissue damage? As penicillin becomes more abundantly available we shall have the answer to this question. If it proves successful, it will, I am confident, confer a priceless boon on the millions who go through each winter with "the sniffles," sore throats, sinusitis, laryngitis, bronchitis, and pneumonia. It may even prove to have an effect upon the incidence of the most serious aftermath of upper respiratory infections, acute rheumatic fever.

Can we look forward to the elimination of the streptococcal, staphylococcal, pneumococcal, and meningococcal infections for which penicillin is specific? We need only review the history of other infections for which we have had for many years specific preventives and therapeutic agents to find the answer to this question. Smallpox, typhoid fever, diphtheria, and tetanus are still with us despite the fact that we have long had adequate measures available for preventing them. There are other factors entering into the picture which should have a restraining effect upon our earlier enthusiasm. It is now evident that the resourceful bacteria have a greater ability than we first realized for sidestepping the action of penicillin and other chemotherapeutic agents by developing forms increasingly resistant to these drugs. Clinical experience with penicillin thus far, with the recognition that resistant forms of bacteria may develop, has taught us one very important lesson about the use of this drug and any other chemotherapeutic specific. It might almost be expressed as the first clinical law in the use of such agents. Do not use penicillin or any other chemotherapeutic agent at all unless you are prepared to use enough to eliminate completely the infection.

While penicillin was shown to be almost without toxicity according to

pharmacological criteria, as the drug has been used clinically an increasing number of patients have developed allergic reactions to it. In one institution the incidence of urticarial and other skin reactions has recently been as high as 15 per cent of the patients to whom the drug has been administered. Fortunately the reactions have in general not been severe. As penicillin becomes more widely used and particularly in repeated courses, we may expect this incidence of allergic reactions to increase in the normal course of events. And here a word of caution is in order. If penicillin proves to be an agent having a high incidence of allergic sensitivity, it may be the course of wisdom to reserve its employment for serious infections, rather than to risk the chance of using it in minor infections and not be able to administer it when life depends on the drug. Time and further experience will furnish the answer to this question. At any rate these facts all point to the necessity of adding more than one string to our bow. And it is important that we develop agents having differing catabolic actions upon bacteria. Research workers in chemotherapy are aware of our needs in this direction, and a variety of new antibiotics and synthesized compounds are being developed to strike down bacteria whichever way they may turn.

Not so long ago Sir Alexander Fleming said, "It would be remarkable if the first useful antibiotic, penicillin, to be discovered should be the last or even the best." Even while this was being said new antibiotics were emerging from the recesses of laboratories to be tested in animals and finally in clinics. More than fifty antibiotics have been described (most of them during 1945), but the most promising, possibly because the most intensively studied, is streptomycin. In 1942 Waksman and Woodruff identi-

fied a soil microorganisms, *Streptomyces lavendulae*, which produced a substance, streptothricin, having a selective bacteriostatic action against a variety of Gram-negative and Gram-positive organisms. It looked good at first but unfortunately exhibited a delayed toxicity, causing the death of mice several days after injection, a phenomenon even more marked in larger animals, including the monkey. Because of this Waksman and his associates turned to other related organisms. One in particular, *Streptomyces griseus*, had previously been isolated by Waksman from heavily manured field soil in 1916. In 1944 Waksman, Bugie, and Schatz succeeded in growing this member of the actinomycetes family on a complex medium consisting largely of corn steep and meat extract, and found that it produced a highly potent anti-bacterial substance called streptomycin. But of particular interest was the fact that streptomycin exhibited in the test tube activity against a wide range of bacteria, including Gram-positive as well as Gram-negative organisms. Significantly it also inhibited the activity of *Mycobacterium tuberculosis* in a dilution of 1 to 30,000.

Like streptothricin, early preparations of streptomycin caused reactions which were at first somewhat disconcerting. Upon parenteral administration of the drug to human beings, an acute, severe histamine-like action, consisting chiefly of flushing of the face, throbbing headache, nausea, vomiting, joint pains, skin rash, and a drug fever, appeared after two or three days of treatment. In certain animal species pure streptomycin leads to a fatty infiltration of the liver and the kidneys, which appears to be reversible if drug administration is discontinued. Fortunately the more highly purified preparations from which the histamine-like impurities have been eliminated do not cause the acute reac-

tion, and thus far there is no evidence that the fatty infiltration occurs in man. At least it has not been disclosed by any known form of laboratory investigation, and so far as I know, all post-mortem examinations on patients treated with streptomycin have been negative in this important respect.

From a straight pharmacological standpoint, streptomycin is not toxicologically inert as is penicillin; but with this exception there is no potent chemotherapeutic agent of comparable activity which has a lower acute and chronic toxicity.

Streptomycin is very rapidly absorbed after subcutaneous and intramuscular administration, the maximum concentration in the blood occurring within 15 to 30 minutes. The concentration decreases in the next 5 to 6 hours to levels below accurate measurement. It appears to be eliminated from the blood stream somewhat more slowly than penicillin. Unlike penicillin, however, streptomycin is very poorly absorbed from the gastrointestinal tract. On oral administration one can detect no blood levels by methods presently available and 10 per cent or less appears in the urine.

Preparations of crystalline streptomycin have already been obtained, so that we have a basis for an accurate quantitative standard for determining the potency of this drug. The pure streptomycin base has a potency of approximately 800 to 810 units per mg. Streptomycin is highly soluble in water and appears to be more stable than penicillin in the presence of moisture.

The production of streptomycin does not appear to be more difficult at this stage of the game than that of penicillin. If anything it is easier to make. But streptomycin has one serious drawback—its progenitor, *Streptomyces griseus*, is a meat eater, and meat extract is one of the most expensive chemical intermediates with which in-

dustry has ever been confronted. Unless our chemists find a synthetic diet to substitute for meat extract, streptomycin will always be more expensive to make than penicillin. At present levels of production, which are still on a pilot plant basis, costs are in the neighborhood of \$15 per million units, which is roughly a day's dose. However, we can count on a lowering of production costs when large scale production is placed in operation. We must not be impatient but should remember that the first discovery of the activity of this material occurred only near the end of 1944.

In any discussion of a new therapeutic agent there is always one important question—What is it good for? Let us keep in mind that we have had only small amounts of this drug and a little over a year ago its source was nothing more than one of the myriad of organisms present in heavily manured soil. In this short period of time it is almost impossible to obtain the volume of clinical data necessary for a sound appraisal of the worth of the drug. But the science of chemotherapy is moving faster than formerly and we already have a number of promising leads with respect to streptomycin. In fact we would not be at all surprised if streptomycin turned out to be as great a boon to mankind as penicillin. I am led to this speculation because the spectrum of penicillin is almost identical with that of the already known sulfa drugs, whereas streptomycin appears to include within its ambit groups of organisms against which we had no effective therapeutic specifics.

It is now clearly established that this antibiotic is specific against mixed urinary tract infections which have always proved troublesome in the past. Such infections are common in injuries to any portion of the genitourinary tract, and these infections occur almost invariably in neurological injuries in-

volving the functioning of the bladder. There were many of these during the war.

Streptomycin has been highly effective in overcoming experimental tularemia infections in animals, although only a few human cases have been treated. The drug appears to be highly effective against the wide variety of *Salmonella* infections, both those limited to the gastrointestinal tract and rarer systemic infections with organisms of this group. In view of the widespread character of such intestinal infections, particularly in the tropics, streptomycin should prove a great boon to humanity. However, the evidence is not yet convincing that the course of typhoid fever has been modified by streptomycin. It has appeared to be successful in some cases, but the fact that it has not been dramatically effective in other cases is perhaps more significant.

An important advance is suggested by the successful employment of streptomycin in at least 4 cases of meningitis due to the influenza bacillus. Streptomycin may prove to be effective in some cases of undulant fever of human beings and Bang's disease of cattle, but early data offer no basis for forecast. As one might expect, streptomycin has been effective in the local treatment of mixed wound infections and particularly those of amputation stumps that resist healing.

Those interested in public health have been most anxious to learn as early as possible what can be expected of streptomycin in the treatment of tuberculosis. Because of the nature of the pathological lesions of tuberculosis, we cannot expect any drug to have a rapidly curative action, any more than we can expect immediate restoration of cities that have been reduced to rubble. It takes time to reverse a condition in which tissue destruction and fibrosis are so extensive. We must also realize that many forms of tuberculosis improve

spontaneously without treatment. On the basis of preliminary data it looks as if streptomycin would have to be administered in daily doses of not less than a million units for a period of seven weeks or longer. Based on the present manufacturing cost of \$15 per million units, a course of treatment would cost in excess of \$735 for the drug alone. This is a lot of money, but it is still less than the cost of prolonged rest in bed in an institution and the economic loss of earning power that results from present methods of treatment. But, taking all of these factors into consideration, there is a real basis for restrained optimism in viewing the prospects of streptomycin against human tuberculosis. To say more than this at the present time might be doing a disservice to the many unfortunate sufferers of this disease.

Streptomycin has a wide usefulness in veterinary medicine which I will not attempt to discuss at the present time. It is sufficient to say that it appears to be the first thoroughly effective therapeutic agent available for many of the infections that are so destructive to cattle, swine, sheep, chickens, and ducks.

In order to maintain a degree of perspective, let us briefly refer to a few historic milestones. Penicillin was produced in small amounts on a laboratory scale prior to 1940. In 1940 Chain and Florey and their coworkers devised methods for obtaining a considerable yield of penicillin, and in the same year a number of clinical cases were successfully treated in England. But it was not until 5 years later, with all the pressure of a war, that penicillin was available for all needs in adequate amounts. Let us keep this time schedule in mind when we consider streptomycin supplies.

The activity of streptomycin was not known until 1944. To produce ade-

quate amounts of the drug, large plants will have to be constructed. Some of these are under way. To equal the record set by penicillin, we would have until 1950 to produce adequate amounts of streptomycin. It looks now as if a moderate supply would be available in 1946 and adequate amounts in 1947. In the meantime, papers on streptomycin and popular articles have made the medical profession and the public aware of its therapeutic promise. I see no objection to this because I believe that all functions in a democracy should be subject to the white glare of public attention. But an increasing number of distress calls for streptomycin are being received. It is impossible to meet these requests, even for the cases that are most meritorious. This situation presents a challenge not only to the medical profession but to the pharmaceutical industry as well.

When penicillin was insufficiently available, machinery was set up for allocating the drug through the Office of Scientific Research and Development of the National Research Council. It was capably administered by Dr. Chester Keefer of Boston. It is to be hoped that the streptomycin problem will be met as intelligently and effectively in peace as the penicillin problem was under the stress of war. In my judgment, it is imperative that the medical profession in conjunction with the industry take steps at once to provide machinery for allocating streptomycin through a central organization to those cases in which streptomycin is known to be effective and in accord with their urgency. Such allocation must also take into account the amounts necessary for the orderly progress of clinical research. Perhaps Dr. Chester Keefer can be persuaded again to devote himself to this labor of love.\*

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\* A civilian allocation program went into effect on March 1, 1946, with Dr. Keefer in charge.

Our attempts to synthesize proteins, quinine, and penicillin have taught us a lesson. It is that there are many chemical processes which low forms of life can do more efficiently than man. It has shown us again that discovery of nature's secrets is just as important as invention. There are thousands of low forms of life that remain to be

studied. Among these are undoubtedly many that can be turned to the task of manufacturing substances useful to man. As Fleming suggested, let us hope that there will be found among them useful biotics and antibiotics that will make penicillin and streptomycin seem like crude pioneers in a new era of therapeutics and hope for man.

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## A New Answer to an Old Problem

Dairymen, milk plant operators, public health officials, and others concerned with the protection of milk supplies against contamination by flies will find a practical answer to this problem in *The Use of DDT in the Control of Flies on Dairy Farms*, a new pamphlet outlining procedures formulated by Professor H. H. Schwardt, of the Department of Entomology, Cornell University.

DDT offers an efficient means of fly control at a cost so low that no dairyman can afford to be without it. The pamphlet gives pointers on the forms of this chemical most suitable for use on dairy farms, where to obtain them, and how to apply them; specific purposes for which each may be used to the best advantage; various types of sprayers and where they can be purchased; and measures for the protection of man and

animals against accidental poisoning by DDT.

*The Use of DDT in the Control of Flies on Dairy Farms* is sponsored by a number of official city and state agencies in the New York milkshed including the New York State and City Departments of Health and the Westchester and Nassau County Departments of Health. Milk dealers in New York City plan to distribute this publication without charge to producers in the metropolitan area. The New York State Department of Health has a limited supply for free distribution to interested persons Upstate. Requests should be addressed to the Bureau of Milk Sanitation, New York State Department of Health, The Governor Alfred E. Smith State Office Building, Albany 1, New York.—New York State *Health News*, June 3, 1946.

# The Challenge to the Voluntary Health Agency\*

PHILIP S. PLATT, PH.D., F.A.P.H.A.

*Executive Director, New York Association for the Blind, Formerly Director of Study of Voluntary Health Agencies, National Health Council, New York, N. Y.*

THE Study of Voluntary Health Agencies was conceived in 1940 by a coordinating committee of the National Health Council, of which Dr. Louis I. Dublin was the very able chairman. The Council authorized its committee "to make application of the Rockefeller Foundation for a grant of \$75,000 to finance a study into the character of the organization of private health agencies in the field, their relationship to each other and to the several National Associations comprising the Council." Furthermore, it was desired to determine the implications of the findings so far as the national voluntary health associations were concerned. For many years, much effort had been put forth by those agencies to coordinate their efforts on the national level in the interest of efficiency and economy. It seemed to them that the next great step in this direction could be taken only after a study had been made in states, cities, and counties where the effects of coordinated effort, or lack of it, could be most readily appraised. It was in those local areas that the service was directly delivered to the beneficiaries. It could, therefore, be best measured on the spot, a proper evaluation made of the place of the private organization in the gen-

eral health picture, and its most effective structure, function, and sponsorship determined. Such at least were the goals as they were expressed in 1940; it was a most timely, far-sighted and courageous action on the part of the National Health Council.

The Rockefeller Foundation, through its Division of Medical Services, Dr. Alan Gregg, Director, was interested in the project and provided generously for its support. Later, it made available as director of the study that wise, gifted, and experienced apostle of public health, its vice-president, Selskar Michael Gunn. His death in August, 1944, was a tragic loss to public health and a host of friends. Mr. Gunn began what he considered a profoundly important, challenging task in the fall of 1941. An advisory committee of 31 outstanding leaders in health work was appointed, from which an executive committee, consisting of Drs. Dublin, Atwater, and Hiscock, Emilie Sargent, and Bleecker Marquette, was selected.

Fifty-five cities and counties in 25 states were chosen for intensive study. Key people throughout the country were consulted, and five schedules or questionnaires were prepared. It was decided that the large field presented by the hospital and its out-patient department would be left for others to study. There remained for our study the very large field of the voluntary health agency, which we defined as an organization holding periodic meetings, rais-

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\* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association in New York, N. Y., December 13, 1945.

ing funds through voluntary contributions, and expending them for the promotion of health. In this restricted field we found an amazing number of agencies, over 20,000 in fact, when the Red Cross branches as well as chapters were included.

Despite the inescapable questionnaires, the approach was essentially informal, and its success depended upon winning the confidence and genuine collaboration of those we visited. And rarely did we fail to receive the most complete coöperation. The busiest executive, board member, or health officer arranged his time to give us his unhurried opinions. We are thus profoundly grateful for the generous help of all who made the study possible.

Our interviews varied from an hour to twenty-four hours—the latter agreeably spread over several days. Our interest was not in the quantitative aspects of an agency's work but in its origins, growth, achievements, failures, relationships, problems, and future planning. What was its form of organization, how thoughtful was its planning, how did it coöperate with others? And, always, what was its attitude toward the local health department and the medical society? We did not come bringing panaceas, nor could we have performed our mission if we had complied with the many earnest requests to remain and help work out solutions to local problems.

Our assignment, covering three years' work, brought us into the thinking of 509 agencies, city, county, state, and national, 98 health departments, 45 other official agencies, 60 meetings with groups—a total of 712, representing 1,090 interviews. There were, in addition, 52 replies to questionnaires sent to agencies in cities we did not visit, and there were 100 interviews with 46 national civic and welfare organizations only partially concerned with health.

The synthesis of such a mass of facts, opinions, and impressions, covering so varied a species as the voluntary health agency, presented a difficult problem. It was soon seen that the study did not lend itself to valid, statistical treatment, and that a purely descriptive method would have been bewildering. Accordingly, the interpretive method was chosen. This meant that our specific and general findings and conclusions had to be arrived at on the basis of our overall experience and judgment.

It is not necessary for me to defend the voluntary health agency. You know its great contribution as pioneer, as demonstrator, as educator, as ally and critic of the health department, as promoter of health legislation, and sometimes as coördinator and planner of community health.

What then, is needed in the immediate future? It is necessary, I feel, that the voluntary health agency should be touched by the quickening finger of desire, desire to become the more effective organization it can and must be. There is no longer place for the smug, self-satisfied board or executive. There is no place for the uncoöperative, the dog-in-the-manger, or the ultra-rich agency; no place for the agency with the pinch-penny board, half-paid executive and piffling program. There is indeed much that is deplorable in voluntary health agencies. They have lacked the kind of leadership that can stir the imagination of the man in the street, and can produce a health program that really means something and which enlists the community behind it, with its shoulders as well as its dollars. The extremes of poverty and wealth in the funds collected by the local and national agencies, funds gathered regardless of relative health needs, is a clear sign of the irrationality of our competitive money raising campaigns.



The multiplicity of small, weak agencies, with dreadfully limited programs, was revealed throughout our survey. These, of course, are hangovers from the glorious days of truly "free enterprise" when anybody with half an idea could start a weak-kneed agency which was a credit to no one. But the result has been much duplication of effort. There are often not only two official public health nursing services, but two, three, or four voluntary nursing services in a community. We ran across thirteen separate services in one city. What waste this represents in duplication of work, time, and transportation, in lack of supervision, uniformity as to standards and procedures, and in the absence of community planning, is hard to conceive. The interest in infant and child welfare, and especially in the crippled child, is likewise duplicative and poorly coördinated.

We found almost everywhere that the voluntary health program was not an integrated or unified one but as separated, broken-up and specialized as the scattered pieces of a mosaic. However necessary each new agency may once have been to arouse public interest in attacking a newly recognized health hazard or disease, it does not follow that this pattern of the past must remain the pattern of the future. Thoughtful citizens today cannot understand why there have to be so many separate efforts, nor can they readily appraise the many appeals for funds that come to them. Certainly it seems like wasted effort and poor organization. The trend, we are convinced, is in the direction of the single, all-inclusive organization. On the grounds of logic, necessity, efficiency, personnel, and financing, we can no longer justify the separate existence of so many specialized agencies. There is no reason why a voluntary agency should not carry on a broad, unified program

as effectively as the official agency does today.

Trained workers in the voluntary health field have been altogether too few. With the exception of our public health nurses, most have been trained only in the school of hard knocks. We do not get the pick of the crop. And it is small wonder. An aggressive move to recruit the best, to train them better for their tasks and to pay them proper wages is long overdue. The art of administration is also largely teachable, on a postgraduate level at least, but it is seldom taught.

On the local level, then, we found much that voluntary health agencies lacked. And so naturally, after making the diagnosis, we prescribed the treatment for revitalizing them. We urge:

1. That each agency engage in a searching self-analysis, with occasional help of expert counsel, of its present goals, activities, functions, methods, and relationships.
2. That it concentrate on the task of strengthening its leadership, executive, and board.
3. That it achieve coördinated health planning with other health agencies through a dynamic health council.
4. That their appeals for public support be simplified and unified.
5. That the agencies transfer appropriate activities to the official agency.
6. That they recognize the primary position of leadership of the official agency, and exert their influence to strengthen and support such leadership.

Furthermore, in order to determine the effectiveness of unifying in one strong organization all related health promotional voluntary agencies, demonstrations should be set up, with national assistance, on local and state levels, with a program giving appropriate emphasis to all aspects of a unified health program.

Such is the prescription. Will the patient take it? There is already a good deal of evidence that the needle is under the skin. While it is still early to judge results, a number of re-

quests have come to the National Health Council for counsel and advice. In Hartford, the implication of the study for the local Health Council and the Visiting Nurse Association has already been considered, and board members are individually using the Self-Evaluation Schedule for Voluntary Health Agencies, which appears as Appendix III in the volume. The same is true in New Haven and Hamden, and copies have been sent to all VNA's in the state. An agency in Boston is following the same procedure. Elsewhere, a number of institutes to study agency problems are being planned.\* If a qualified staff were available in the National Health Council, as we hope there soon will be, there would be an eager demand for consultative services. And, may I add that, in preparing this book for publication, it was the hope of the authors and the executive committee that it would provide that disquieting sense of attainable goals unattained, and of embarrassing questions unanswered, that would keep agency boards and executives on their toes for some time to come.

On the national level we found the same unevenness as on the local level, the same specialization, the same competition for support, the same extremes of wealth and poverty. The sixteen principal national agencies (three of which are not members of the National Health Council) are certainly the fountainheads of technical information and advice, of stimulation and encouragement to their state and local affiliates, from which they, in return, receive support. The development of methods for advancing the professional education of their health workers falls in large degree upon these national agencies. Likewise the standardization

of techniques, medical research, statistical and social studies, and authoritative publications are particularly their task. But the advantages that come from concentrating on a limited objective are in a measure neutralized by the restriction of the work of each organization to a single disease or organ, with other important health needs neglected. Our answer to that weakness is not the Utopian consolidation of all agencies into one. Rather it is a strong, nationally supported, ably-led National Health Council, which could speak with authority and provide national leadership for all needs in the voluntary health field. With the strongest lay sponsorship and the ablest executive direction, with a highly competent field staff, a vitally compelling, dynamic, nation-wide program of health education, financial support would be assured. The goals common to all national agencies would be immensely furthered and a more complete program assured. From such a Council would come eventually a pooling of the fund-raising appeals of our national agencies, along lines similar to the National War Fund, in coöperation with the Community Chests.

Under the stimulus of such a unifying plan for voluntary activities, the American people would, for the first time, have an opportunity to get behind a broad, unified attack upon their common problems of health and disease. Out of the experience of budgeting would come more unified planning and a more integrated program of work. The joint efforts would strengthen community solidarity. They would serve to establish a wider understanding of the essential unity of the human being and the ultimate attainment by him of the highest possible level of physical and emotional health.

These are not exclusively the hopes of Selskar Gunn and myself, although we accept full responsibility for them.

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\* Since December 13, 1945, reports indicate that many agencies, both local and state, are using the book as the basis for discussion and study. The self-evaluation schedule particularly is being widely used.

They are the convictions of the members of the executive committee who have given unremitting study, encouragement, and advice to the authors and are still laboring to bring the recommendations to fulfillment. We have had the counsel of many able persons in the health and welfare fields and our conclusions are substantially those arrived at by a group of forty leaders who gave several days to their considerations. We have been amazed

at the number of prominent national figures who have come forth and asserted their conviction of the necessity and inevitability of a pooling of fund-raising appeals.

This study, we believe, has not so much started a movement of significance as come forward at the psychological moment to crystallize it. We have great confidence that 1946 will see far-reaching developments for the future of voluntary health agencies.

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## U. S. Army Studies on "Q" Fever Reported

According to a report from the Office of the Surgeon General, U. S. Army, Washington, "Q" fever, a pneumonia-like disease first described from Australia, apparently is endemic around the Mediterranean area. Scattered outbreaks have been reported among American troops in Italy, Greece, and Corsica.

Study of these outbreaks by medical officers on the spot at an Army General Medical Laboratory and by the Commission on Acute Respiratory Diseases of the Surgeon General's office have thrown considerable light on this supposedly rare illness and have established that it is (essentially) identical with the so-called Balkan grippé which was epidemic in Greece in 1942.

The responsible agent has been identified as a very minute, rod-shaped organism belonging to the family of Rickettsia similar to the organism which causes typhus fever. It has been

impossible to establish the means of transmission, except that evidence suggests that the causative organism apparently is inhaled in infected dust.

In laboratory outbreaks the disease appears to be extremely infectious. Accidental infections have occurred in almost every laboratory where experimental work with this Rickettsia has been conducted. It is likely to be confused with atypical pneumonia, of which the causative agent has not been identified. The syndromes of the two are somewhat similar.

A significant finding of the Army studies was that "Q" fever Rickettsia becomes much more virulent with successive passages through the blood of experimental animals. The malady comes suddenly with chills, sweats, aching muscles, and frontal headache. The victim usually is incapacitated for two weeks or more.

# Infectiousness of the "Closed Case" in Tuberculosis

MARGERY BLAHD, ELEANOR I. LESLIE, AND  
SOL ROY ROSENTHAL

*Tice Laboratory and Clinic, Chicago Municipal Tuberculosis Sanatorium, and  
the College of Medicine, University of Illinois, Department of  
Bacteriology and Public Health, Chicago, Ill.*

AN inquiry into the adequacy of public health criteria for classifying a case of tuberculosis as "closed" (interpreted by many physicians to mean non-infectious) was indicated by an analysis of the statistics of 1,080 children of the Tice Clinic of the Chicago Municipal Tuberculosis Sanatorium. This study is unique in that all of the children under consideration were followed since birth and the tuberculosis status of the households was checked by the standard laboratory methods. In this regard it differs from clinical surveys, which are reviewed.

The experiment of the Tice Laboratory and Clinic, which is organized primarily for the purpose of studying the efficacy of BCG vaccination, is divided into two sections: one concerned with children from homes free of tuberculosis as confirmed by x-ray of all household members; the other with children from homes with tuberculous cases. Both groups come generally from the poorer and more crowded districts of Chicago, where mortality rate of tuberculosis and the tuberculin reactivity are high.

The index cases in the contact groups are cases of pulmonary tuberculosis but established as presumably "closed" immediately before and during the period of this study. That fact was ascertained at the onset by concentra-

tion, direct smears and cultures of 24 hour sputum specimens, and subsequently by monthly sputum concentration and direct smears. In the event tubercle bacilli are isolated the patient is separated from children under 16 in accordance with Illinois State Law.<sup>1</sup> All cases in which a positive sputum has been shown must by Illinois law be considered open for a period of at least three months and thereafter until three successive specimens of sputum, collected at intervals of one week, contain no tubercle bacilli. The sputum examinations must be made by a laboratory approved by the Illinois Department of Public Health. Furthermore, physical examination of the patient must indicate that the type of disease could be such as to coincide with a negative sputum.

Alternate children of both contact and non-contact groups are vaccinated with BCG at birth or within three months. The other children are registered as controls at the same time. All are given semiannual physical examinations, x-rays and tuberculin tests. The Vollmer patch test is used, and where there is a questionable reading, it is checked by the Mantoux test (O.T. 1-100 dilution or 1 mg.). All contact children are maintained in foster homes from birth until 6 weeks to 3 months of age depending on the

relationship and the severity of the disease in the index case. Approximately 60 per cent of these children are colored.

This report is concerned with a comparison only of the controls in the contact and non-contact groups with respect to the tuberculin reactivity. Table 1 shows that among the children 1 year of age 2.24 per cent of the non-exposed, and 21.6 per cent of the group in contact with tuberculosis presumably closed, were positive to tuberculin. At 2 years of age the percentages were respectively 9 per cent and 52.7 per cent (Table 1).

negative admittedly may have been positive at times. The then current accepted techniques of sputum examination were apparently employed by Brailey as well as by Mac Phedran and Opie whose work appeared in 1935. In neither case was there any mention of lavage. Brailey's study shows the following results among white children in the 0-4 age group: positive reactions to 1 mg. or less of tuberculin were found in 57.8 per cent of 199 children exposed to open tuberculosis, 18.4 per cent of 38 children exposed to "closed" tuberculosis, and 3.2 per cent of 158 non-contacts. Although the chance of

TABLE 1

*Results of Tuberculin Reaction in Non-contact Children and Children in Contact with "Closed" Cases of Tuberculosis*

Non-contacts				Contacts			
Age in Months	No. Tested	No. Positive	Per cent Positive	Age in Months	No. Tested	No. Positive	Per cent Positive
3-7	1,025	2	.19	3-7	55	4	7.3
8-12	939	21	2.24	8-12	37	8	21.6
13-18	849	40	4.07	13-18	32	10	31.3
19-24	776	70	9.00	19-24	19	10	52.7

There is a great discrepancy between the sizes of the two groups because of the relative incidence of tuberculosis and because the work with the contact cases was not begun until 1940—three years after the non-contact study was initiated. Because of this discrepancy the results can indicate only a trend—one, however, that is definite.\*

Surveys reported by Brailey<sup>2</sup> and Mac Phedran and Opie<sup>3</sup> have disclosed that contacts to "closed" cases although showing a lower tuberculin reactivity than contacts to open cases, have a higher rate of positivity than non-contact children living in similar neighborhoods.

Brailey's survey was made on families registered between 1928 and 1937. Sputum was examined as often as practical. Those index cases considered

infection is 18 times greater for those exposed to open tuberculosis than non-contacts, it is still 6 times greater for "closed" case contacts than non-contacts. These statistics for the non-contacts were compiled by Frobisher.<sup>4</sup>

In the same age group, Mac Phedran and Opie found 79.3 per cent of 145 exposed to open tuberculosis positive to 1 mg. or less of tuberculin, 28.7 per cent of 108 in contact with "closed" tuberculosis, and 18.1 per cent of 210 non-exposed children.

Since children in contact with so-called "closed" tuberculosis have a higher tuberculin reactivity than control children of the same neighborhoods but without household exposure, the "closed" index case in the home must be the source of infection. Therefore, the question arises: Are our methods for determining a case of tuberculosis as closed sufficiently precise and reliable?

\* Note at end of article.

Does the doctor instruct the family to guard against the constant hazard of infection or does he foster a false sense of security because the case is "closed"? The regulations observed by the U. S. Public Health Service conform with those formulated by the committee on diagnostic standards of the National Tuberculosis Association.<sup>5</sup> These can be considered typical of the regulations in general public health usage.

According to these regulations a specimen of sputum is considered negative if no bacilli are disclosed on concentration. Following observation or treatment, a patient in order to be classified as "apparently arrested" must have one adequate specimen of sputum or gastric lavage reported negative. It is mentioned as desirable to call a specimen of sputum negative only after examination by all available methods—culture and animal inoculation as well as smear of the sputum; and culture and animal inoculation of stomach washings. However, according to *Diagnostic Standards*, "such rigid standards cannot be applied at present because many tuberculosis institutions are not equipped for this work. For the time being, it is therefore suggested that minimal standards be applied."

The recent literature has demonstrated the importance of gastric lavage in determining the presence of tubercle bacilli; Robinson and Dunn<sup>6</sup> in 1943 compiled all results of gastric washings in the available literature. A total of 12,040 stomach lavages were done on apparently closed subjects with 36.8 per cent positive results; 6,843 were on children with 36.6 per cent positive and 5,197 on adults with 37.1 per cent positive. In the first thousand lavages in their laboratory in "no sputum" cases and on patients with smears negative on concentration, 30.3 per cent were positive; 3.9 per cent were posi-

tive on smear of concentrate, and the rest on culture and/or guinea pig inoculation. More than one-third had had negative sputum cultures previously

Foley and Andosca,<sup>7</sup> reporting on 639 cases with no bacilli on direct smear or by concentration methods, found 29.2 per cent were positive by direct smear of lavage material. Of 60 stomach specimens, 25 per cent were positive by direct smear, 65 per cent by guinea pig inoculation.

The value of gastric lavage in cases with no sputum is demonstrated by Decker, Ordway, and Medlar.<sup>8</sup> By repeated examination of sputum and stomach washings, through culture and guinea pig inoculation, 67 of 97 cases of minimal tuberculosis were found positive during the five years 1936–1940, with 41 of 56 no sputum cases showing tubercle bacilli. From 1930 to 1935 only 24 of 172 minimal cases were positive. During the earlier period, no gastric lavages were done and only cases with sputum were tested by culture and guinea pig inoculation.

A recent study by Koons<sup>9</sup> re-emphasizes the generally known superiority of guinea pig inoculations over smears of concentrate. Of 590 specimens of sputum, pleural fluid, gastric washings, and other questionably tuberculous fluids, 6.1 per cent were positive on direct smear after concentration, while 21.8 per cent were positive on guinea pig inoculation.

The importance of more refined and scanning laboratory procedures is indicated by a study by Ordway, Medlar, and Sasano<sup>10</sup> of 99 cases without sputum or with sputum negative to smear on concentration. Seventy-six were positive by culture or guinea pig inoculation on monthly tests one or more times over a period of one year. Gastric lavage specimens were employed in the absence of sputum. However, 62 of the 76 positive individuals showed bacilli only on 72 hour sputum samples

or after two consecutive gastric washings. Only one of 12 patients with thoracoplasties and 9 of 28 patients with pneumothorax were consistently negative.

It is evident, therefore, that our minimal public health standards need revision upward—with the requirement of periodic culture and/or guinea pig inoculation of pooled sputum samples covering several consecutive days, and gastric washings from patients without sputum or with consistently negative sputum. Medlar and his colleagues recommend as minimal requirements concentrated 72 hour sputum samples or two consecutive gastric washings for the "no sputum" cases.

Although a so-called "closed" case is not as grave a source of infection as a frankly open one, it is more insidious. From the results of employment of modern and thorough methods, it is clear that most discharged patients intermittently release tubercle bacilli.<sup>10</sup> The physician too frequently assures the patient and family of the non-infectiousness of the "closed case." As segregation of potential carriers is the basic measure which can effectively eradicate tuberculosis it is suggested that until more rigid standards can be applied and more tuberculosis institutions are equipped to carry out efficiently the necessary laboratory procedures, the term "closed" be dropped.

The physician and the public must be constantly impressed to respect and treat tuberculosis as a highly contagious disease.

#### SUMMARY

1. A singularly well controlled study of 1,080 children followed since birth indicates a markedly higher rate of tuberculin positivity in children exposed to the so-called "closed" cases of tuberculosis than in non-contact controls.

2. Current public health criteria for

classifying a tuberculosis patient as "closed" are given and their adequacy is questioned.

3. It is suggested that until the rigid standards formulated by the U. S. Public Health Service and the Committee on Diagnostic Standards of the National Tuberculosis Association can be complied with, the term "closed case" be dropped.

#### REFERENCES

1. Control of Contagious Diseases. Department of Public Health. State of Illinois.
2. Brailey, M. E. Tuberculosis in Children. *Am. J. Hyg.*, Sect. A, 31:1, 1940.
3. Mac Phedran, F. M., and Opie, E. L. The Spread of Tuberculosis in Families. *Am. J. Hyg.*, 22:565, 1935.
4. Frobisher, M., Jr. A Study of the Tuberculin Reaction in Young Children in the Eastern Health District of Baltimore, Md. 1933. Unpublished; quoted by Brailey. Ref. No. 2.
5. *Diagnostic Standards and Classification of Tuberculosis*. New York, N. Y.: National Tuberculosis Association, 1940.
6. Robinson, J. L., and Dunn, W. T. Gastric Lavage and Sputum Cultures. *Am. Rev. Tuberc.*, 47:413, 1943.
7. Foley, J. A., and Andosca, J. B. Value of Examination of Gastric Contents for Tubercle Bacilli. *Ann. Int. Med.*, 19:629, 1943.
8. Dicker, W. P., Ordway, W. H., and Medlar, E. M. Demonstration of Tubercle Bacilli in Minimal Pulmonary Tuberculosis. *Am. Rev. Tuberc.*, 47:625, 1943.
9. Koons, M. E. Laboratory Diagnosis of Tuberculosis—A Comparative Study of Animal Inoculation and Microscopic Examination. *J. Lab. & Clin. Med.*, 29:75, 1944.
10. Ordway, W. H., Medlar, E. M., and Lasano, K. T. Routine Application of Concentration, Culture and Guinea Pig Inoculation for the Demonstration of Tubercle Bacilli in Tuberculous Cases under Treatment. *Yale J. Biol. & Med.*, 15:353, 1943.
11. Lyman, D. R. Pregnancy and Tuberculosis. *Yale J. Biol. & Med.*, 15:464, 1943.

#### \* FOOTNOTE

Applying the formula of Significance of the difference between proportions,

$$\sigma D\% = \sqrt{pq \left( \frac{1}{N_1} + \frac{1}{N_2} \right)},$$

in the various age groups reveals that in the 3-7 month group there are 48 chances in 100 that the difference is a chance difference due to sampling; in the 8-12 months group it is 0.000000002 chances in 100; in the 13-18 months group 0.0000000002 chances in 100, and in the 19-21 months group 0.0000002 chances in 100.

# Hematuria Due to Picric Acid Poisoning at a Naval Anchorage in Japan

A. H. HARRIS, LT. COMDR., MC(S), USNR, F.A.P.H.A.,  
O. F. BINKLEY, LIEUT., H(S), USNR, AND  
B. M. CHENOWETH, JR., LIEUT., MC(S), USNR

*U. S. Naval Medical Research Unit No. 2, Guam, M. I.*

THE toxic effects of picric acid are well known in the field of industrial medicine. As far as we are aware, however, poisoning due to the ingestion of this chemical in water distilled from the sea has heretofore not occurred as a public health problem. Although circumstances leading to poisoning by picric acid of men aboard ships may never recur, the small outbreak of hematuria induced by this compound is considered sufficiently interesting to warrant reporting.

Two persons were found to have microscopic hematuria by an alert medical officer on board one of the ships in the naval anchorage near Wakayama. The urinalyses were routine, on patients being treated for irrelevant conditions. He then examined the sediments of urine, after centrifuging, from 245 men, representing almost the whole ship's company. All were found to have asymptomatic, microscopic hematuria. In consequence, an investigation was

undertaken by Naval Epidemiology Unit No. 402 stationed at Yokosuka, the results of which indicated that hematuria was widespread among the personnel of various ships. Up to 15 specimens of urine were examined from personnel on each of 28 ships; one or more persons on 25 of them were shown to have hematuria.

Table 1 is the summary of the findings obtained by the epidemiology group. Of particular significance was the fact that the three persons constituting the unit from Yokosuka themselves developed hematuria within 24 hours after they began drinking water aboard one of the ships; the condition disappeared shortly after their return to their base. Similarly, 6 volunteers aboard a ship having just entered the harbor, whose urine specimens at the time of arrival failed to reveal any red blood cells, developed slight hematuria after drinking water from one of the ships that had been at

TABLE 1  
*Analysis of Results Obtained in the Survey by Epidemiology Unit 402*

	+	++	+++	++++	Total Pos.	Total Neg.	Total
No. of urine specs.	83	33	12	10	138	245	383
Per cent	21.6	8.6	3.1	2.6	35.9	64.1	
+ = 1-10 r.b.c. per l.p.f. in the urinary sediment after centrifuging.							
+++ = 10-20 " " " " " "							
++++ = 20-30 " " " " " "							
++++ = 30+ " " " " " "							



the anchorage for some time. No evidence of hematuria was reported among military personnel ashore.

By way of confirmation of the finding of hematuria at the anchorage, an independent survey was conducted by the laboratory director from a Naval hospital ship. Of 110 specimens from

personnel aboard 11 ships, 16 were found to contain red blood cells. The existence of hematuria was thus firmly established. It was thought that other areas might be similarly involved, but dispatches from three distant ports, giving the results of examinations of about 1,000 specimens at each place,

TABLE 2

## Composite of Salient Data

Ships Indicated in Order of Arrival at Wakayama	Number of Per- sons Aboard	Estimated Length of Time of Using Water Made at Wakayama Anchorage before Survey	Picric Acid Determinations				Urinalyses				Hematuria Reported before Present Survey
			P. p. m. in Fresh Water Sample	In 1st Effect Evap. Scale	In Scale from Pipe	In Urine	Number of Per- sons Examined	Number with Albumin	Number with Erythrocytes	Number with Pus Cells	
1	185	11 wks.		+++			15	0	0	0	Yes *
2	31	None					10	0	0	6	
3	273	5 wks.	2		++	+++	27	1	0	7	Yes *
4	309	10 wks.		++			30	0	0	17	Yes *
5	305	8 wks.	2 <sup>b</sup>	++++	++++	+++	40	0	2	34	Yes *
6	250	8 wks.		+++			19	0	0	15	Yes *
7	802	8 wks.	2	++	++++	++	198	1	5	69 <sup>c</sup>	Yes *
8	45	None					8	0	0	4	No
9	120	None					12	0	0	5	No
10	240	5 wks.					43	0	0	35	Yes *
11	175	9 wks.	0		+		47	0	0	12 <sup>d</sup>	Yes *
12	275	6 wks.					15	0	0	5	Yes *
13	157	4 wks.	10	+++	+	++	9	0	0	0	No
14	156	6 wks.		++			15	0	0	8	Yes *
15	255	4 wks.		++			25	0	2	17	Yes *
16	90	4 wks.	0	—	—	—	21	0	0	9	Yes *
17	99	3 wks.	0		—	—	10	0	0	4	Yes *
18	56						9	0	0	5	Yes *
19	105	2 wks.	0-2	—	—						No
20	26						10	0	0	6	
21	60			+			18	0	0	12	Yes *
22	79	1 wk.		—	+++		10	0	1	6	Yes *
23		None		+							Yes *
24	94	None	0		—		10	0	0	7	Yes
25	208	None	0		+		20	0	0	1	Yes
26	81	None	0	—			9	0	0	9	
27	35	None					10	0	1	8	
28			0-2	—	+		10	0	0	7	No
29	204	None	0 <sup>e</sup>	+++		+	10	0	0	9	No
30							10	0	0	5	
31	34	None					9	0	0	5	No
32	238	None					32	0	0	24	No

Note: Blank spaces denote absence of information.

Plus signs represent relative concentrations of picric acid.

<sup>a</sup> = Approximately 10 p.p.m. in sample obtained at time of outbreak.

<sup>b</sup> = Approximately 20 p.p.m. in sample obtained at time of outbreak.

<sup>c</sup> = Based on the examination of 106 specimens only.

<sup>d</sup> = Based on the examination of 17 specimens only.

<sup>e</sup> = Cargo water from Samar, P.I.

\* = Ships studied in earlier epidemiological survey.

indicated that no such condition existed. Curiously, one report indicated that the urine specimens from all of 25 persons examined on one ship revealed evidence of hematuria on one day, but two days later this finding could not be confirmed. Up to this time the ship had never been at Wakayama.

We might have been inclined to suspect that the observation had been inaccurate were it not for the fact that studies subsequently undertaken upon scale from a section of water pipe from this ship (Table 2, No. 25) upon her arrival at Wakayama indicated the presence of picric acid. Thus she must have been exposed, somewhere, to the same poison contaminating the water of ships that had been for some time at the anchorage. Evidence of similar exposure found in a few of the other late arrivals at Wakayama was equally baffling.

Epidemiological considerations at this time pointed strongly to chemical contamination of the water. The possibility of bacterial contamination was quickly dismissed by laboratory studies. Accordingly, ships that had distilled water at this anchorage for drinking purposes were advised to dump the water, to wash the tanks farther out at sea, and to distill a fresh supply. Most of the ships did so. The hematuria was so trifling in most cases that the presence of albumin in the urine could not be demonstrated by the test employing heat and acetic acid. After the fresh water tanks were flushed, the incidence of hematuria declined, but the decrease was shared by some ships that continued to use the harbor water without cleaning their tanks.

Incidentally, abnormally large numbers of pus cells had been found in a considerable proportion of urinary sediments. There was no decline in the pyuria commensurate with that of the hematuria. The significance of this fact is not clear; it may have been re-

lated in some way to the chemical irritation of the urinary tract. In only 3 cases was there clinical evidence of involvement of the kidneys. One patient developed gross hematuria; another, hematuria, albuminuria, hypertension, and generalized anascarca; a third, hematuria, albuminuria, headache, fever, and malaise. All three had been transferred to a hospital ship just prior to our arrival. As far as is known, these represent the only cases of urinary tract involvement presenting clinical symptoms. The evidence that these conditions had been induced by the same agent causing the widespread microscopic hematuria was purely circumstantial.

#### PROCEDURE

Members of the Naval Medical Research Unit No. 2 were ordered to Wakayama to continue the investigation, since the studies undertaken prior to our arrival indicated that the hematuria was probably due to chemical contamination of the drinking water distilled from sea water in the harbor, the scope of our investigation initially could be, and finally was, limited accordingly. The epidemiological, chemical, and clinical laboratory aspects of the study were handled by the three writers respectively.

*Epidemiological*—From the epidemiological standpoint, it was important to determine what chemical might have been dumped in sufficient quantity to poison the drinking water made by distillation of the harbor water, and to obtain information regarding the time and place. The fact that Wakayama had been a prominent industrial city, prior to its virtual destruction by air attacks, indicated the necessity of a survey of existing industrial plants that might have discharged toxic wastes into the two streams that traverse the city and flow into the sea close to the anchorage. Several plants that either

were then, or recently had been, in operation were found to have manufactured or handled aromatic compounds capable of inducing hematuria if ingested. Although at the time it seemed that wastes from these plants might have been responsible for the poisoning, subsequent examination of water from these streams and from one at Kainan, together with significant discoveries elsewhere, compelled us to disregard this phase of the investigation.

We had heard that confiscated Japanese ammunition, including picric acid, had been dumped somewhere in that part of Japan. The Unit's chemist, acting on that bit of information, made discoveries that spurred efforts to learn the location and time of the disposal of picric acid. The commanding officer of the Army organization responsible for the seizure and dumping of picric acid in the area provided all the details; two areas in which picric acid was dumped were close enough to be of potential importance to ships in the Wakayama anchorage and to those coming there from the east.

An amount considerably in excess of 100 tons had been dumped roughly 15 miles in a south-westerly direction from the anchorage, over a period of 6 weeks, beginning 3 weeks before the first case of hematuria was discovered. The prevailing westerly wind, together with the tide running north along the coast at a velocity of 1 knot, evidently carried the acid, before it had become completely dissolved and dispersed, through the anchorage where the ships were pumping harbor water into the stills. Less than 25 tons of picric acid likewise had been dumped off the southern coast of Honshu not far from the course followed by ships coming to Wakayama from the east. Since experience had shown that picric acid, dumped in crates, could float ashore, dry out, and become explosive, care was taken to open all the crates and dump the chemical into the

sea in powder form. Thus, unwittingly, the opportunity for poisoning was considerably increased.

Although there were puzzling exceptions, in general the ships that were significantly affected were those that had distilled water at Wakayama while the dumping of picric acid was in progress. A resumé of all of the findings is found in Table 2. Although one might have expected that fish would be poisoned by the picric acid, we were informed by the Fisherman's Guild at Wakayama that the fishing was better than usual.

*Chemical*—It was the task of the chemist to discover, isolate, and identify any toxic chemical compound that might be involved in the adulteration of the supply of drinking water. Aromatic amines or nitro compounds were suspected from the start of the study because of their known action in the induction of hematuria and also because of their general tendency to be carried over in the vapor phase in the distillation of water. It seemed extremely unlikely that heavy metals would be present in significant quantities in the harbor water or would be carried over in the distillation process. The information, received early in the investigation, that picric acid had been dumped somewhere in the general area, directed attention particularly to this compound.

Aromatic amines can be demonstrated by coupling their diazonium salts with beta-naphthol. The resulting colored compound is soluble in alkaline aqueous solution and insoluble in acid. In an acid medium the coupled aromatic compound can be extracted with chloroform, thus separating it, even in small amounts, from other colored material that remains in solution in the acidified, aqueous portion. Aromatic nitro compounds must first be reduced to aromatic amino compounds by treatment with metallic tin and hydrochloric acid, before the diazo color reaction can be

produced. This fact serves to distinguish them from the aromatic amines. The test for the presence of aromatic nitro compounds was made as follows:

To 5 ml. of the water to be examined, in a test tube, were added 0.5 ml. of concentrated hydrochloric acid and about 50 mg. of tin shavings. The mixture was heated in a boiling water bath for about 5 minutes and the supernatant solution was decanted into a test tube. After the solution had cooled to room temperature, about 50 mg. of sodium nitrite were added; the solution was thoroughly mixed and allowed to stand for about 5 minutes. Two ml. of a fresh solution of 100 mg. beta-naphthol in 100 ml. of 10 per cent sodium hydroxide were added, and the solution was thoroughly mixed and allowed to stand for 2 or 3 minutes. One ml. of concentrated hydrochloric acid and 5 ml. of chloroform were added and the mixture was thoroughly shaken. The color in the chloroform layer was noted, a positive result being indicated by a red color and a negative one by yellow.

The following samples were tested for the presence of aromatic amines and nitro compounds: (1) harbor water, (2) water from three streams emptying near the anchorage, (3) first effect evaporator scale from the stills of various ships, (4) scale from pipes carrying drinking water, (5) drinking water, including two samples, saved on two ships, that had been drawn at what was apparently the height of the outbreak of hematuria. The procedure for the detection of aromatic nitro compounds in the scale of the evaporators or in the fresh water system varied little from that given above. Approximately 5 gm. of the evaporator scale was treated with 10 ml. of water and 1 ml. of concentrated hydrochloric acid. As soon as the evolution of carbon dioxide was complete, the mixture was filtered and 5 ml. of the filtrate were tested as above. For the detection of aromatic nitro compounds in fresh water systems, a piece of pipe that had been in continuous use was removed. Into a two-front section stoppered at one end, 100 ml.

of 10 per cent hydrochloric acid were introduced. The dilute acid was allowed to remain in the pipe for approximately 15 minutes and was then filtered to remove insoluble material. Five ml. of the filtrate was tested in the same manner as the water, except that no additional acid was required above that used in the extraction of the scale. Only galvanized pipe was tested; copper pipe could not be tested since copper ions interfere in the test for aromatic nitro compounds.

The harbor water at the time of our investigation failed to reveal any evidence of aromatic amines or nitro compounds, nor were these substances found in the water from the stream at Kainan. They were detectable in the two streams flowing through Wakayama, but the concentration was low. In the case of the first effect evaporator scale submitted by various ships, the case was altogether different; relatively high concentrations of aromatic nitro compounds (but not amines) were found in several instances, as shown in Table 2. In most cases the concentration was highest in ships that had not recently cracked the scale and that were distilling large quantities of water during the time the picric acid was being dumped. A similar condition was found in scale from pipes carrying drinking water. In only three instances were concentrations of aromatic nitro compounds in the drinking water itself remarkably high. In one instance the ship concerned had failed to wash the tanks and fill with freshly distilled water. In the other two instances the water tested had been drawn about 2 weeks previously, before the ships' tanks were flushed, and had been saved for future examination.

Since picric acid is a strong organic acid and since its alkaline earth salts are sparingly soluble, it was to be expected that a considerable amount of picric acid might adhere to the scale

in the fresh water system. The fact that aromatic nitro compounds were present in relatively high concentration in the scale of the evaporators and of the pipes in the fresh water system, was presumptive evidence that the chemical was picric acid, for neutral or alkaline nitro compounds would not be expected to adhere to the alkaline scale.

The isolation of picric acid was undertaken as follows: The dilute hydrochloric acid extract from a pipe that had been removed from the fresh water system of one of the involved ships was concentrated to about 10 ml. Sufficient sodium chloride was added to saturate the solution, which was then extracted exhaustively with small portions of ethyl ether. The ether extracts were combined and dried with anhydrous sodium sulfate. The ether solution was then evaporated to dryness and the resulting yellow residue was dissolved in about 10 ml. of hot absolute alcohol. A small amount of material that did not dissolve was removed by centrifugation. The alcoholic solution was evaporated to about 4 ml. in a boiling water bath. Upon cooling of the solution, large yellow crystals appeared. The crystals were removed by centrifugation and were dissolved with the aid of heat in about 3 ml. of glacial acetic acid. Upon cooling, yellow crystals again appeared. The crystalline material was collected by centrifugation and dried at 100° C. in a Fischer drying apparatus. The melting point of the purified product was found to be 119–120° C. (uncorrected). There was no depression of the melting point when the material was mixed with an authentic specimen of picric acid. The material isolated from the fresh water pipe was, therefore, picric acid.

Trinitrotoluene and trinitroaniline may have contributed to the hematuria. Since their properties are such that adsorption on evaporator or other scale would be negligible, evidence of these

compounds would not persist for long. However, at the time that chemical examinations of the water and scale were undertaken, hematuria developed in two of our own Unit, indicating beyond reasonable doubt that picric acid was the responsible chemical.

*Clinical*—While the epidemiological and chemical studies were in progress, a clinical picture of conditions at the time of our investigation was being obtained. A questionnaire was delivered to every ship in the harbor. A majority of the questionnaires that were returned indicated that hematuria had been present on most of the ships, but that generalized skin rash, edema or albuminuria had not been observed. Information was obtained as to dates on which water, distilled at the anchorage, had been used for drinking purposes. An effort was made to secure urine samples from about 10 per cent of the men on each ship, and this goal was almost reached. Specimens from a total of 711 men were submitted. Urinary sediments were examined after centrifugation. In only 11 cases was there evidence of microscopic hematuria, 2 of them being in our own Unit which had only recently arrived. Albumin was detected in two specimens by the method using heat and acetic acid. The number of pus cells in the urinary sediment was abnormally large in a considerable proportion of cases. A random sample of urine specimens was tested for evidence of picric acid. The poison was found in a number of instances, even in the absence of any other demonstrable abnormality. Cell counts and bilirubin determinations were made on blood from a group of 20 men on two of the affected ships. The findings were within normal limits, except for a slight but definite elevation of the blood bilirubin level in one instance.

Most of the ships at the anchorage had ceased using harbor water a few days prior to our arrival. By the time

that chemical studies were undertaken, no evidence of aromatic compounds could be found in it, so a return to the use of harbor water seemed justifiable. Accordingly, one of the larger ships began distilling and using water from the harbor again. Urine specimens from a group of men on this ship were examined daily, and in none was there evidence of recurring hematuria.

#### DISCUSSION

The assembled evidence indicated conclusively that picric acid dumped near the naval anchorage at Wakayama was pumped into ships' stills and carried over with the vapor phase into the fresh water supply, inducing hematuria among those drinking the water. The danger of dumping high explosives near an anchorage where ships that distill drinking water are berthed, had not been generally appreciated heretofore. Poisoning by high concentrations of industrial wastes, while undoubtedly not contributory in this case, is always a theoretical possibility in harbors near industrial areas. Purification by fractional distillation would seem to be impractical. Possibly a filter of activated charcoal or of an activated resin would

effectively remove such substances from the distilled water used for drinking purposes.

#### SUMMARY

An outbreak of hematuria involving many of the personnel aboard ships at Wakayama anchorage, in Japan, was due to the ingestion of picric acid in the drinking water. All evidence indicated that acid dumped in large quantities near the anchorage was distilled with harbor water, thus contaminating the fresh water supply.

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# Teaching of Public Health Statistics

ESCHSCHOLTZIA L. LUCIA, PH.D., F.A.P.H.A.

*School of Public Health, University of California, Berkeley, Calif.*

PUBLIC health organization and medical care may be considered as a pyramidal structure with official and nonofficial agencies operating together to produce an effective program of community service. The supporting base of the pyramid is the unification of public health statistics, biometric analysis of field and laboratory data, and the quantitative evaluation of service records. The function of statistics is to collect, summarize, analyze, and present numerical data for administrative units and services which are integral parts of the total program of public health.

In the past, public health organization limited its activity to one service and then to another as need arose, giving little consideration to the importance of overall administration. At the present time, the emphasis is placed on the integration of services with each other and with basic administrative procedures within the framework of the organization. Furthermore, administrators of programs of public health are taking cognizance of the importance of knowledge concerning the physical, biological, socio-economic, and medical background of the populations under their jurisdictions.

The investigation of demographic and public health data and the statistical appraisal of the limitations and effectiveness of correlated programs are functions of public health statistics. The improvement of procedures of registration of births and deaths and the reporting of disease, the design of all forms, including those of service records and summaries, are important

responsibilities of the public health statistician. The continuous study of reports and records by intelligent statistical analysis and interpretation becomes the foundation of public health and the indicator of its progress.

Bureau chiefs and administrative officers, as well as field and laboratory personnel, should be trained to appreciate the usefulness of numerical data. They should understand what can be accomplished by the application of statistical methods and the value of the continuous checks provided by periodical summarization which may be used subsequently in directing field, office, and laboratory activities.

For the past twenty-five years, statistics has been one of the arteries of basic instruction in public health at the University of California, a result of the teaching philosophy of the late Dr. John Nivison Force, one-time Professor of Epidemiology and Chairman of the former Department of Hygiene. As early as 1920 it was pointed out that health officers and public health administrators would be able to do a better job for local communities and the State, if the University would educate and train alert young students who would be available for positions in offices and laboratories after graduation as majors in public health. It also was believed that sanitarians (then inspectors), public health nurses, laboratory technicians, and, of course, administrators should receive enough instruction in public health statistics and biometry to make them aware of the usefulness of these quantitative techniques. Then, as now, training in

statistics and biometry was considered essential for persons who would receive degrees in public health, whatever their particular field of specialization. Inasmuch as candidates for postgraduate training were few in number at that time and were usually physicians, it seemed unrealistic to expect them to enter the field of statistics with its more or less limited vocational opportunities. Non-medical graduate students often were not able to present evidence of adequate training in the sciences which were believed to be necessary for an understanding of public health.

For this reason, undergraduate training in public health was introduced to fill the need for trained auxiliary personnel in departments of public health. Each year many students enrolled in an introductory course of lectures on preventive medicine and public health and the history of epidemiology. Those who became interested in possible vocational opportunities for community service in public health statistics and laboratory work, majored in public health. They were required to complete basic courses in chemistry, physics, zoölogy, bacteriology, and economics (practically a pre-medical program) so that they could enter junior and senior courses in advanced microbiology, biochemistry, protozoölogy, parasitology, social economics, public administration, and public health courses in administration, biometry, epidemiology, laboratory, and statistics. After graduation, students so prepared could enter positions in public health departments either as public health analysts or laboratory technicians. The result was a process of public health education of health officers and administrators by infiltration of young enthusiastic proponents of public health.

This approach to the training of public health personnel has been somewhat modified since the organization of the School of Public Health at the Univer-

sity of California, but in effect the basic requirement of a rather complete background in the physical, biological, and social sciences remains unchanged for both undergraduate and graduate students, and all are required to complete at least basic courses in public health statistics. The students may be grouped into the following categories:

I. *Undergraduate students* who will enter positions in local, state, or federal units of service, and in voluntary health agencies as laboratory technicians or public health analysts.

II. *Graduate students*

1. Medical graduates who wish to become health administrators or epidemiologists.

2. Medical and non-medical graduates who wish to specialize in one of the following fields:

Biostatistics  
Health Education  
Industrial Hygiene  
Laboratory  
Maternal and Child Hygiene  
Sanitary Engineering

III. *Special in-service training groups*

1. Local deputy registrars
2. Latin American health educators
3. Naval sanitation officers
4. Sanitarians
5. Other special groups

Although the introductory courses in public health statistics and biometry are more or less formal in presentation since they are attended by students from curricula and departments other than public health, the classes are provided with bibliographical material and data for projects, giving students opportunities for individual investigation.

In the basic course of public health statistics the subjects of enumeration of population and housing, registration of births, deaths, marriages, and divorces, the reporting of disease, and the evaluation of surveys are discussed with special reference to the authority under which each kind of collection is made. Sections of the *California Health and Safety Code* which refer to pro-



cedures of registration and reporting are studied in detail. Students are required to work out questionnaires on subjects of public health which are of special interest to them. Test runs for the effectiveness of the questionnaire are made, using members of the class as informants. If necessary, the questionnaires are then revised, a numerical code is set up and a punch card devised for mechanical tabulation of information. Because of the close coöperation between the California State Department of Public Health and the School, original data for class use and demonstration are always available. To illustrate, anonymous data from medical certificates of death are used by the students to acquaint them with coding procedures, the *International List* and *Manual of Joint Causes of Death*, and the *Supplementary Instructions for Coding* published by the Division of Vital Statistics of the United States Bureau of the Census. Among other projects included in the course of instruction is an introduction to methods used in a demographic study of an area.

Three major points are emphasized in all class discussions: (1) that the demographic background of the population served by a public health organization must be investigated; (2) that integration of all public health records is essential to availability of information, whether they are birth or death certificates, reports of disease and epidemiological records, service records of public health nurses, sanitarians or laboratory technicians, or laboratory reports; (3) that effective public health administration requires that trained public health statisticians should be responsible for the maintenance of files and the continuous and current analysis of reports and records, so that information is readily available for study.

Conference hours are scheduled when instructors are available for questioning by students. During these periods

the students are given the opportunity to learn the operation of various kinds of electrical calculating machines. The statistical laboratory is open at all times. Students are encouraged to become acquainted with census publications, reports of state planning boards, national foundations and health departments, and professional journals.

The basic techniques of biostatistics are taught in an elementary course in biometry. Methods of analysis are presented with reference to an outline of the general procedure of a scientific investigation (field or laboratory). The use of these statistical methods and the importance of inferential reasoning as applied particularly to medical research and epidemiology is discussed.

The introductory courses of public health statistics and biometry are prerequisite to the course in epidemiology. There are continuation courses in all three subjects for those students who wish to qualify for advanced studies in these fields.

The plan of instruction in the more advanced courses is quasi-tutorial with emphasis on highly diversified individual projects. These lie in the fields of special interest of the students: health education, administration, laboratory, epidemiology, sanitation, or statistics.

Again, because of the close coöperation and interest of the California State Department of Public Health, health officers and staffs of local public health units, medical record librarians and statisticians in private and public hospitals in the area, students are able to become acquainted with conditions in the field while attending the university. This is of great advantage to both students and faculty. The State Department of Public Health has provided apprenticeships in public health statistics which have been open to graduating majors for a number of years. Competent students are recommended for these apprenticeships. They are given

permission to work under supervision in local health units as well as in the various Bureaus of the State Department: Maternal and Child Health, Tuberculosis, Venereal Diseases, Acute Communicable Diseases, Records and Statistics, and the Division of Laboratories. State and local civil service examinations are given for various grades of positions in public health statistics, making possible opportunities for promotion. The grades are Junior Public Health Analyst, Senior Public Health Analyst, Associate Statistician, and Chief Statistician.

Special combination seminars of public health statistics and biometry are organized for graduate students (medical or non-medical) who have advanced standing in the School of Public Health and who are working for degrees. Weekly sessions are held for discussion of methods of public health statistics important to participating members of the seminar. Techniques of biometric analysis useful in elucidating laboratory and field studies and of particular value in epidemiological investigation are presented and demonstrated. Each student enrolled is obliged to pursue a project in public health of his own choosing, acceptable to the member of the staff with whom he works and in which statistical procedures and techniques will be applied. The wide range of subjects selected for special study is indicated in the following list:

Statistical evaluation of laboratory procedures with special reference to cost and time accounting

Demographic analysis of a county in California for purposes of determining need for and availability of public health and welfare services

Evaluation of methods for allocation of funds for public health program

Statistical evaluation of the efficacy of DDT in the control of an insect vector

Statistical study of preventive dental service and cost in a sample of institutionalized children

Statistical study of bacteriological types

with reference to the epidemiology of a specific infection

If a properly qualified graduate student wishes to pursue studies in mathematical statistics concurrently with research in a field in which biometry is used, it is possible to arrange a coördinated program in the School of Public Health and the Statistical Division of the Department of Mathematics of the University.

Special courses have been developed for groups participating in in-service training. The techniques of public health statistics which apply to the special field of activity for which those in attendance are being trained, are selected for instruction. However, whether the students are sanitarians, Naval sanitation officers, health educators from Latin American countries, or deputy local registrars—lectures, assignments and discussions present and emphasize the importance of integration of special records with those of other services in public health.

In the summer of 1938 the first short in-service training course for local deputy registrars of vital statistics was organized. It has been repeated four times. Through the sponsorship of the State Department of Public Health, funds from Social Security were made available to defray the expenses of instruction and the travel and living allowances of the students. Approximately one hundred local deputy registrars from organized county health units and sixteen from city health departments in California enrolled and completed the courses. Although there was great variation in educational background, experience, and responsibility of position among these special students, their interest, effort, and enthusiasm unified the class to such an extent that these courses will be remembered as a very enjoyable teaching experience.

These employees of local health units are the custodians of important records

of great value to the individual as well as to the nation. The collection of basic data concerned with the beginning and end of life and the appraisal of their completeness and accuracy is the responsibility of local deputy registrars, many of whom have had little training for the positions which they hold, and practically no supervision while on the job. They have been criticised often because of their seeming lack of interest and their inability to keep routine procedures on a current basis. Many of the deputies had no realization of the part which they were contributing to state and local programs of public health. By the time the course ended, some were organizing manuals of procedures which would be useful in their own offices. Many who were working alone had very little guidance from the health officer; yet they were expected to perform all of the duties of a trained junior public health analyst. Some of the deputy registrars were unacquainted with the *California Health and Safety Code* which contains the laws under which they function. They were actually unaware of the legal requirements of procedures of birth and death registration on local, state, and federal levels. They had never heard of nor seen the *International List and Manual of Joint Causes of Death*. Residence correction of births and deaths was a new concept to them. Few knew the overall organization of the health departments in which they were employed and the relation of the local unit to the State Department.

The lack of knowledge of activities which have to do with registration and public health organization is not the responsibility of deputy local registrars but of public health administrators who have relegated the registration of vital data and reporting of disease to the position of clerical routine. Because of the increasing complexity of these procedures caused by legal provisions

for delayed registration, adoption, and legitimation, local registrars and their deputies should be encouraged to keep abreast of the times. More interchange of ideas and information between local and state offices would assist integration of purpose and practice. Closer coöperation should be developed by local and state health authorities and the Division of Vital Statistics of the U. S. Bureau of the Census. In-service training in schools of public health may be the answer to this need.

In conclusion, it may be stated that the teaching of public health statistics and biometry over the past twenty-five years has been mentally stimulating to members of the staff of the university so engaged. The development of public health has been so rapid, the changes in approach have been so revolutionary, that numerical data and quantitative analysis have had to remain makeshift, at least to a certain extent. The broadening of the concept of public health to include activities of curative as well as preventive medicine is reflected in the uses which can be made of public health statistics.

Public health statistics is no longer a dull grind of figures, but a method by which some of the problems of our living can be meaningfully investigated in order that methods of prevention and amelioration can be tested and initiated. The social significance of public health, the need for better understanding of populations, and the desirability for integration of all public social services have caught the eye and imagination of western youth. Many are serving in local, state, federal, and voluntary health agencies as public health statisticians. There remain many opportunities for others to serve. With a broad educational background, adequate vocational training, and the will to accomplish in spite of seemingly insurmountable obstacles, youth has the chance of a lifetime.

# Use of a Potassium Tellurite Medium in the Detection of *Corynebacterium diphtheriae*

DORIS K. KELLOGG AND REUBEN D. WENDE

*Serobacteriologist, and Director, Houston City Health Laboratory, Houston, Tex.*

IN some cities in the United States, diphtheria is not at present considered a major problem, and in their laboratories the throat culture positive for *Corynebacterium diphtheriae* has become a rarity. Some of these municipalities have been successful in the enforcement of mass immunization. However, there still remain many areas in which diphtheria bacilli continue to thrive. In 1944 15,323 cases of diphtheria were reported in the United States.<sup>1</sup> An increase in the number and mortality of diphtheria cases for 1945 may be attributed in part to the migrational shift in population from isolated, small communities into the larger cities where war industries were located. Crowded, undesirable living conditions are conducive to the spread of *C. diphtheriae*. With the end of the war another shift in population is being experienced. The possibility that returning troops from Europe may bring with them strains of the more virulent forms of diphtheria bacilli that are prevalent in Northern Europe is a potential threat. In view of these conditions, diphtheria is still a problem that war-rants attention.

Since Conradi and Troch<sup>2</sup> in 1912 first used tellurite in a selective serum medium for the isolation of *C. diphtheriae*, many media employing potassium tellurite have been introduced and used for the isolation and the detection of diphtheria bacilli. Because these

media are extremely numerous and the better ones well known, they will not be enumerated. There was a tendency on the part of early workers<sup>3-5</sup> to emphasize tellurite media as valuable for isolation and typing purposes. Loeffler's coagulated serum medium, however, continued to be used for detection. In recent years a number of independent investigators<sup>6-21</sup> have established the greater accuracy of the tellurite media in the detection of *C. diphtheriae*. The direct inoculation of the tellurite media from the nose and throat swabs and not as a subculture from Loeffler's medium was found by many to give good results and to facilitate speed in reporting. The microscopic examination of tellurite slants when employed proved less satisfactory than the use of the tellurite plate. Young<sup>15</sup> in examining 1,045 swabs in parallel on Loeffler's slants and tellurite agar plates, found 150 positives, of which 149 were positive on the tellurite and 74 on the Loeffler's media. Wright<sup>16</sup> urged the use of a tellurite plating medium for the elimination of the false results obtained microscopically on Loeffler's—false negatives due to overgrowth by other organisms or to the failure of *C. diphtheriae* to develop typical morphology, and false positives due to confusion with diphtheroids. Cruickshank<sup>17</sup> reported that in the diagnosis of diphtheria Loeffler's medium misses about 10-30 per cent

of positive cultures and that the tellurite medium confirms diphtheria infection in 95-98 per cent of cases. Knox<sup>18</sup> found that tellurite medium gives about twice as many positive results as Loeffler's serum medium in examining swabs from convalescents and contacts.

Most of the investigations cited were conducted by English and Australian bacteriologists. Little mention can be found in American journals of the use of tellurite media for the detection of *C. diphtheriae*. Frobisher and Van Volkenburgh<sup>19</sup> and Frobisher<sup>20</sup> made note of the isolation of diphtheria bacilli from a considerable number of throat cultures which on microscopic examination had revealed only diphtheroids or other unrelated organisms. In one survey by plating out morphologically doubtful and negative Loeffler cultures on tellurite medium, over 3 times as many carriers were found as would have been the case had this procedure not been used. Perry and Petran<sup>21</sup> reported the value of a tellurite medium for the accurate and dependable identification of *C. diphtheriae* in routine laboratory examinations.

#### PRESENT USE OF TELLURITE MEDIA IN THE UNITED STATES

Because information was desired as to what extent potassium tellurite media are being used in the United States, a questionnaire upon procedures followed in the detection and isolation of *C. diphtheriae* was submitted to the 48 state public health laboratories. It was assumed that their methods would be followed by other public health laboratories within the respective states and that the data obtained in this manner would give an indication of the methods in general use throughout the United States. In addition the questionnaire was sent to a number of municipal public health laboratories. Forty-five state and 21 municipal public health laboratories returned the questionnaire.

Of this group of 66 laboratories, 4 use a tellurite medium routinely for the detection of *C. diphtheriae*. Two of these inoculate a tellurite plate directly from swabs; 1 microscopically examines potassium tellurite slants, streaking the positive cultures to tellurite plates; and the other inoculates tellurite plates from both swabs and potassium tellurite slants. Thirty-five laboratories, after microscopic detection of *C. diphtheriae* on Loeffler's medium, subculture from this medium to a tellurite plate for isolation for virulence tests or to check atypical cultures. Twenty-six laboratories do not use tellurite media at all, and 1 laboratory, in considering its use, is trying different kinds of tellurite media. The types of media in use by the laboratories mentioned are as follows:

Difco <sup>22</sup> tellurite medium.....	16
Douglas <sup>2</sup> serum tellurite medium or Gilbert <sup>23</sup> modification .....	9
Frobisher <sup>19</sup> cystine tellurite medium...	6
McLeod <sup>3</sup> chocolate tellurite medium or modification .....	6
Hall <sup>24</sup> tellurite medium.....	3
A blood tellurite medium incompletely described .....	1

#### PURPOSE AND PROCEDURE

The superiority of a potassium tellurite medium over Loeffler's in the detection of diphtheria bacilli is established, but because tellurite media are so little used for this purpose in the United States, the findings of this laboratory are presented as a stimulus to their wider employment.

The present study had its inception in the case of J. K., age 15, which instigated changes in the procedures used for the detection of *C. diphtheriae* in this laboratory. J. K. became known through the routine examination of contacts to diphtheria cases. He had spent the night in the home of his sister, sleeping with his nephew who later developed diphtheria and died. J. K. spent his after-school hours selling

ice cream in a local confectionery.

The laboratory examination of J. K. followed a routine prescribed for contacts of diphtheria patients. A nose and a throat swab were inoculated upon a Loeffler slant which was incubated for 18 hours. A smear of this culture, stained with Loeffler's alkaline methylene blue, revealed no typical diphtheria-like organisms among the numerous staphylococci and other throat flora. As the policy of the laboratory provided that only Loeffler cultures found doubtful or positive for *C. diphtheriae* were to be streaked to a potassium tellurite plate for isolation, it was through an error that J. K.'s culture was inoculated upon this medium. However, the tellurite plate showed many typical diphtheria colonies which, upon being transferred to Loeffler's medium in pure culture, were tinctorially and morphologically typical of *C. diphtheriae*. An intradermal virulence test upon a rabbit gave a strongly positive reaction. An investigation of the other members of the boy's family revealed a brother who was also carrying diphtheria bacilli in his throat.

The experience of having so nearly missed these diphtheria carriers, one of whom was believed to be responsible for a death and who was in a position to spread *C. diphtheriae* to many other individuals, raised the question: How many diphtheria carriers are being missed by the use of Loeffler's as a screening or preliminary medium?

In an effort to determine the answer, this laboratory commenced to use a potassium tellurite medium routinely in addition to Loeffler's for the detection of diphtheria bacilli. Difco's dehydrated Loeffler's blood serum was used, sterilized according to directions in *Diagnostic Procedures and Reagents*.<sup>23</sup> The potassium tellurite medium was a heated, 7 per cent blood agar with a concentration of 0.04 per cent of potassium tellurite. This

medium, which was the same as had been used for isolation purposes, was prepared as follows:

Difco's Dextrose proteose No. 3 <sup>24</sup>	
agar .....	4.2 gm.
Distilled water .....	100 ml.
Sterilize in the autoclave at 15 lb. pressure for 20 min.	
Cool to 75° C. and add aseptically 5 ml. of a sterile 0.8 per cent aqueous potassium tellurite solution (sterilized in the autoclave at 15 lb. pressure for 20 min.).	
Fresh rabbit blood .....	7 ml.
Heat medium for 10 to 15 min. at 75° C. and then cool before pouring plates.	

Ninety-eight per cent of the cultures examined in this laboratory come from convalescents and their contacts. Loeffler slants inoculated with a nose and a throat swab in the home of the patient are brought to the laboratory by the quarantine nurse. Heretofore the swabs had been discarded, but the use of potassium tellurite medium routinely necessitated that the swabs be left in the culture tube. Upon arrival at the laboratory they were streaked upon half of a potassium tellurite plate. No attempt was made to keep separate the nose and the throat swab either on the Loeffler's or the tellurite media.

#### RESULTS

A comparison was made of Loeffler's and potassium tellurite media used in parallel in the detection of *C. diphtheriae* in 622 nose and throat swabs from convalescents and contacts.

The microscopic examination of the Loeffler's medium after 18 hours of incubation at 37° C. was made by 4 individuals in the first series of swabs (Table 1) to minimize personal error. Each observer formed and recorded his impressions independently of the others. It is believed that the four examiners were as well qualified, by training and

TABLE 1

Comparison of Loeffler's Medium and Tellurite Blood Agar in the Examination of 302 Nose and Throat Swabs

Examiner	Per cent				Per cent False Positives (Assumed)	
	L*— T*—	L+ T+	L— T+	False Negatives	L+ T—	
A	176	47	53	17	26	8
B	174	44	56	18	28	8
C	161	53	47	15	41	12
D	181	55	45	14	21	6

\* L = Loeffler, T = tellurite

experience, for recognizing diphtheria bacilli as the average technical worker in a public health laboratory. Unless otherwise indicated, no additional attempt was made to subculture on tellurite medium the organisms identified as *C. diphtheriae* by microscopic examination of Loeffler's medium, since the same swabs were used to inoculate the tellurite and Loeffler's media.

The examination of the tellurite plates inoculated directly from the swabs was made by one person, Examiner D. Each of the 100 positive cultures obtained upon tellurite medium in the first group of 302 swabs (Table 1) was isolated in a pure culture, examined for typical morphology on Loeffler's medium, and checked for the sugar fermentation reactions. All strains identified as *C. diphtheriae* fermented dextrose and not sucrose. An intradermal virulence test was performed on all positive cultures except that the test was not done on repeated cultures of the same individual unless requested or unless a period of six weeks had elapsed since the first virulence test. When a large number of tests were being performed, a rabbit was used, otherwise a guinea pig served as the test animal. Ten of the 100 positive cultures were found to be avirulent.

An analysis of the discrepancies between the two media was not carried out completely. In the first series of swabs examined (Table 1), none of the

negative Loeffler cultures that were positive on the corresponding tellurite plate was streaked to the latter media to determine if diphtheria bacilli could have been isolated from the Loeffler culture. Many of the cultures recorded as positive on Loeffler slants, but negative on the swab-inoculated tellurite plate, were observed to yield almost pure cultures of a diphtheroid. It was assumed that in these instances the readings on Loeffler's medium were false positives caused by the similarity in morphology of diphtheroids and *C. diphtheriae*. This is a very common error. As often occurs, there was little agreement among the four examiners in naming these assumed false positives. Of the 78 positives on Loeffler's that could not be confirmed on the tellurite, 50 were called positive by only 1 examiner, 19 by 2, 8 by 3, and 1 by all 4. It is believed that the latter was *C. diphtheriae* because of its very characteristic morphology and because it was from a patient whose culture had previously been positive on Loeffler's and tellurite media. In this case an unsuccessful attempt was made to isolate the organism by streaking from the positive Loeffler slant to blood agar and tellurite medium. No attempt was made to determine whether the other unconfirmed positives were strains that were inhibited on the tellurite medium<sup>26,27</sup> or were merely the result of mistaken identity on the part of the examiner. It is considered significant

TABLE 2

Variability in Results Obtained in the Examination of Loeffler's Medium of 10 Cultures Found Positive for *C. diphtheriae* on Tellurite Medium

Examiner	Culture Number									
	1	2	3	4	5	6	7	8	9	10
A	+	—	—	+	—	—	+	—	—	+
B	+	—	—	+	—	+	—	+	—	—
C	—	—	+	+	+	—	—	+	—	—
D	—	+	—	+	+	—	+	—	—	—

that, of the 78 positives on Loeffler's that were unconfirmed by tellurite, 58 were from contacts with no clinical evidence of illness, and 11 were from convalescents whose cultures were never found positive on tellurite medium, while 9 were from convalescents whose previous cultures had been positive on tellurite.

when streaked from the Loeffler slant, and it came from a convalescent whose previous cultures had been positive on tellurite medium. As all swabs were first rubbed on the Loeffler slants and then on the tellurite plates, the failure of growth in this instance is attributed to the very small number of organisms present on the swab. From the other

TABLE 3

Comparison of Loeffler's Medium and Tellurite Blood Agar in the Examination of 320 Nose and Throat Swabs

Examiner	L*— T*—	L+ T+	L— T+	Per cent False Negatives	L+ T—	Per cent False Positives
D	182	60	62	19	16	5

\* See footnote to Table 1

In the second series, 320 swabs were examined, the comparison of the two media being made by one individual, Examiner D. The results are shown in Table 3. The same procedure was used as in the first group except that an attempt was made, on all cultures microscopically positive on Loeffler's and negative on tellurite, to isolate the organism by streaking from the positive Loeffler slant to blood agar and tellurite medium in order to determine definitely if the microscopic readings were false positives or the failures on tellurite instances in which *C. diphtheriae* was inhibited by the selective tellurite medium. Of the 16 cultures microscopically positive on Loeffler's but not confirmed on the tellurite plate, diphtheria bacilli were isolated from only 1 culture. However, this was not a strain of diphtheria inhibited by tellurite because it grew readily on this medium

15 unconfirmed positives a diphtheroid was isolated in each case that could have caused the examiner to report diphtheria-like organisms present. Dextrose and sucrose were both fermented by 8 of the diphtheroids, and the other 7 fermented neither. Of the 123 strains of *C. diphtheriae* isolated in the second series of swabs, all fermented dextrose and not sucrose, and 4 were found avirulent.

#### DISCUSSION

For over 50 years Loeffler's serum medium has rendered service in the detection of diphtheria bacilli. It is still considered sufficient in many laboratories, yet it has disadvantages especially in dealing with contacts and carriers. The failure of the Loeffler medium in detecting *C. diphtheriae* in many nose and throat swabs may be attributed to several causes.



First, the use of Loeffler's medium is an attempt to identify *C. diphtheriae* solely on the basis of morphology, and for this reason it must necessarily be unreliable and inaccurate in many instances. The identification of diphtheria bacilli on the basis of morphology alone remains only an individual's opinion unless verified by other methods. The use of a tellurite medium is valuable if for not other reason than that it relieves the perplexity of the examiner in trying to decide whether certain diphtheria-like organisms under the microscope are really diphtheria bacilli or not.

Second, even if the diphtheria bacilli are typical in appearance, due to the small numbers often present in swabs from convalescents and carriers difficulty is experienced in finding them among other bacteria that grow abundantly and uninhibited upon Loeffler's medium. It is often impossible to find and identify small numbers of *C. diphtheriae* among numerous diphtheroids.

Third, there is the occasional difficulty that when other organisms, such as a sporing aerobe, reduce the surface of the Loeffler culture to a fluid, the conditions may not be favorable for the growth of the diphtheria organism.

Fourth, in our studies it was sometimes observed that although the Loeffler culture was found negative, the number of colonies of *C. diphtheriae* on the tellurite plate was enormous and the explanation that the organisms could have been so few as to be missed by microscopic examination is not tenable. A similar view has been expressed by others,<sup>20, 21, 28</sup> some of whom have stated that unless Loeffler's medium is very carefully prepared with particular attention to temperature, time, and pressure during sterilization, the morphology of some strains of *C. diphtheriae* may be so greatly altered as to make them unrecognizable. It seems not unlikely that these morpho-

logical variations occur regardless of the usual methods of preparing the medium.

Loeffler's medium, however, has one very great advantage—speed of growth. This is the one disadvantage of potassium tellurite medium as used for detection and isolation purposes. A few strains of diphtheria bacilli form recognizable colonies on tellurite media in 18 hours but most develop more slowly, requiring 24 to 48 hours. It is unsafe to report negatively the result of a potassium tellurite plate culture in less than 48 hours. Since cell morphology often is not typical upon the tellurite medium, it is usually necessary to transfer a colony to a Loeffler slant to examine for typical morphology; however, by one experienced in the use of tellurite media *C. diphtheriae* can generally be readily identified by colony characteristics. Loeffler's serum medium, although it misses some positives, usually gives a positive result within 18 hours in the majority of acute clinical cases. For this reason, in all cases for diagnosis and where there is urgency, Loeffler's medium should be used. However, public health laboratories generally receive more nose and throat cultures for the release of convalescents and the detection of carriers among contacts than for diagnosis. It is in the examination of such cultures that tellurite medium has proved so superior over Loeffler's medium, and it is believed that the delay of a day or two in reporting is an insignificant matter compared to the marked increase in numbers of positive results obtained.

No attempt is made here to compare or evaluate the merits of the different kinds of tellurite media. Some undoubtedly give better results than others. The data in Knox's report<sup>18</sup> showing that tellurite media give about twice as many positive results as Loeffler's serum medium were compiled from the findings of a number of labo-

ratories using different kinds of tellurite media. It is believed that any type of tellurite plating medium is better than none at all.

#### SUMMARY AND CONCLUSION

The comparative use of Loeffler's serum medium and potassium tellurite blood agar in the detection of *C. diphtheriae* from 622 nose and throat swabs from convalescents and contacts yielded 222 positives on the tellurite medium, of which 113 were also observed on Loeffler's. Of 36 cultures microscopically positive on Loeffler's medium but not confirmed on tellurite, *C. diphtheriae* was proved to be present in 1 culture; diphtheroids were isolated from 15; and the others were not completely investigated.

In view of the results obtained in this laboratory and those of others cited, the use of a potassium tellurite plating medium in the detection of *C. diphtheriae* is considered a much more exact laboratory procedure than the use of Loeffler's serum medium for microscopic examination.

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#### REFERENCES

1. Editorial: Diphtheria Rebounds. *A.J.P.H.*, 35: 826, 1945.
2. Conradi, H., and Troch, P. Ein Verfahren zum Nachweis der Diphtheriebazillen. *Munchen. med. Wehnschr.*, 59:1652, 1912.
3. Douglass, S. R. A New Medium for the Isolation of *B. diphtheriae*. *Brit. J. Exper. Path.*, 3:263, 1922.
4. Anderson, J. S., Happold, F. C., McLeod, J. W., and Thompson, J. G. On the Existence of Two Types of Diphtheria Bacillus: *B. diphtheriae* gravis and *B. diphtheriae* mitis. *J. Path. & Bact.*, 34:667, 1931.
5. Horgan, E. S., and Marshall, A. A Simple Blood Tellurite Medium for the Isolation of *C. diphtheriae*. *J. Hyg.*, 32:544, 1932.
6. Gray, J. D. Allan, and Stone, Doris M. A Comparison of Cultural Methods for Routine Diphtheria Diagnosis. *Brit. M. J.*, 1:572, 1936.
7. Neill, G. A. W. A Simple Tellurite-Chocolate-Agar Medium for the Typing and Isolation of *Corynebacterium Diphtheriae*. *J. Hyg.*, 37:552, 1937.
8. Sutherland, P. L., and Iredale, J. G. Clauberg's Tellurite Indicator Medium in the Routine Diagnosis of *C. Diphtheriae*. *J. Path. & Bact.*, 45:325, 1937.
9. Kerrin, J. C., and Gaze, H. W. A Modified Tellurite Medium for the Detection and Isolation of *Corynebacterium Diphtheriae* in Routine Diagnostic Work. *J. Hyg.*, 37:280, 1937.
10. Shone, H. K., Tucker, J. R., Glass, V., and Wright, H. D. The Laboratory Diagnosis of Diphtheria. *J. Path. & Bact.*, 48:129, 1939.
11. Wilson, Harold. The Relative Error in Examining Swabs for *Corynebacterium diphtheriae* by the Loeffler Slope and by the Clauberg Plate. *M. J. Australia*, 2:373, 1940.
12. Cooper, R. E., Happold, P. C., Johnstone, K. I., McLeod, T. W., Woodcock, H. E., and Zinne-mann, K. S. Laboratory Diagnosis of Diphtheria. *Lancet*, 1:865, 1940.
13. Hoyle, Leslie. A Tellurite Blood Agar Medium for the Rapid Diagnosis of Diphtheria. *Lancet*, 1:175, 1941.
14. Anderson, Phyllis M. A Simple Medium for the Detection of *Corynebacterium Diphtheriae*. *M. J. Australia*, 1:213, 1944.
15. Young, M. L. Diphtheria Diagnosis with Hoyle's Medium. *J. Path. & Bact.*, 54:253, 1942.
16. Wright, Helen A. The Laboratory Diagnosis of Diphtheria: A Note on Some Present-Day Methods. *Edinburgh M. J.*, 50:737, 1943.
17. Cruickshank, R. Diphtheria: 3. Laboratory Aspects. *Pub. Health*, 57:17, 1943.
18. Knox, R. Comparison of Loeffler's In-spirated Serum and Tellurite Blood Medium in the Laboratory Diagnosis of Diphtheria. *Monthly Bull. Ministry of Health & Emergency Pub. Health Lab. Service*, 3:34, 1944.
19. Frobisher, M., Jr., and Van Volkenburgh, V. A. Increased Numbers of *C. diphtheriae* Demonstrable by Extensions of Bacteriological Procedures. *Am. J. Hyg.*, 22:292, 1935.
20. Frobisher, M., Jr. Cystine Tellurite Agar for *C. diphtheriae*. *J. Infect. Dis.*, 60:99, 1937.
21. Perry, C. Alfred, and Petran, Elizabeth. Routine Laboratory Examinations for *C. diphtheriae*. *J. Lab. & Clin. Med.*, 25:71, 1939.
22. *Manual of Dehydrated Culture Media and Reagents*. Detroit: Disco Laboratories Incorporated, 1941.
23. Gilbert, Ruth, and Humphreys, E. M. The Use of Potassium Tellurite in Differential Media. *J. Bact.*, 11:141, 1926.
24. Hall, Nell Peterson. A Simple Tellurite Medium for *B. diphtheriae*. *A.J.P.H.*, 29:664, 1939.
25. *Diagnostic Procedures and Reagents*. New York: American Public Health Association, 1945, p. 9.
26. Glass, V. The Isolation and Typing of *C. Diphtheriae* on Tellurite Blood Agar. *J. Path. & Bact.*, 44:235, 1937.
27. Glass, V. The Effect of Blood Treated by Heat, Acid or Alkali on the Growth of *C. Diphtheriae*. *J. Path. & Bact.*, 48:507, 1939.
28. Goldsworthy, N. E., and Wilson, H. Loeffler's Medium in Relation to Morphology. *J. Path. & Bact.*, 54:183, 1942.

# Realignment of Public Health Nursing Services

MABLE E. GROVER, R.N., AND DOROTHY RUSBY, R.N.

*National Organization for Public Health Nursing, New York, N. Y.*

WAR emergencies called for a new emphasis on coöperative effort in social planning. The formation of the American War-Community Services was a step in this direction because it provided national machinery for joint planning. This agency, a joint project of six national health and welfare agencies\* was organized to help solve unprecedented problems facing local areas during a period of crises, and, through consultation, to assist these communities in developing new services or in strengthening existing ones. AWCS has been financed by contributions from community chests in many cities and has on its Board of Directors representatives of labor, industry, community war chests, and national health and social work agencies. The Service Cooperation Committee, one of the standing committees of AWCS, serves as a medium for coöperative planning. Its membership is made up of representatives from each of the participating groups and other national agencies who have expressed an interest. This is a new experiment for national voluntary agencies and AWCS plans to put special emphasis on improving methods of coöperative planning during the coming year. It should encourage public health agencies to intensify efforts toward more unified action.

The National Organization for Public Health Nursing has long been concerned about the inadequacy of nursing services for the care of the sick in their homes. Early in the war, health needs in war-congested areas convinced the Board of Directors that the expansion of this phase of public health nursing should be a war project. Membership in AWCS afforded opportunity to develop this project. To date assistance has been given to approximately fifty-three communities in developing new services or strengthening existent ones. The program has confirmed the belief that this type of service is needed and has again pointed up the need for greater coördination in community health services.

## OBSERVATIONS DURING FIELD SERVICE

As members of the field staff of the NOPHN-AWCS we have had opportunity to gain firsthand acquaintance with local public health nursing situation and community-wide knowledge of available services. In the communities where we have done intensive work, we have learned what the general public thinks about public health nursing.

Certain basic principles in community planning were inherent in the general plan that we followed:

1. Field visits were made only in response to requests from war communities.
2. The development of new programs or expansion of existing ones was considered in relation to the total community picture.
3. Services for the care of the sick in their homes were considered in relation to all public

\* National Board, Young Women's Christian Association; National Urban League; National Child Welfare Association of America; National Organization for Public Health Nursing; National Family Welfare Association; American Federation of International Institutes.

health nursing needs and resources. A special Nursing Advisory Committee with representatives from National public health nursing agencies was organized at the time the NOPHN-AWCS program started and further strengthened coöperative effort.

4. Intensive service was given only when there was assurance that a representative community group would sponsor the activity. Therefore, in every community our study and planning proceeded in coöperation with local lay and professional groups.

5. The rendering of public health nursing in any one area by as few agencies as possible was encouraged.

6. The official public health agency, legally responsible for the health of the community, was considered the logical and more desirable unit around which to center program planning.

Our experience in communities shows there is ready response from both professional and general citizens to a discussion and interpretation of public health nursing functions and programs. However, we found that the majority of people know too little about the public health nurse. Too often they see her as a nurse who performs only a few activities such as weighing babies at the clinic and quarantining for communicable disease. Usually they associate her services with the very poor.

We found lay persons giving generously of their time, effort, and money to the particular agency with which they are affiliated. Personal contact with these community leaders convinced us that they are sincerely interested. But often they are limited in their concept of community-wide public health nursing services because broad objectives have never been presented to them. They are asked to spend their time on simple and not too interesting activities which require no intelligence and no knowledge of field service. It is not surprising that interest, support, and understanding of public health nursing services by volunteer groups and citizens' committees has not been sustained. The degree to which they possess a comprehensive understanding of the subject is in pro-

portion to the extent professional public health people have permitted them to share responsibility for program planning and administrative problems.

We also observed that many professional workers of local agencies are not sufficiently informed about the programs of other agencies, common areas of endeavor, and the relationship of one to the other. Professional workers in most branches of public health nursing center program-planning around the family. "Health in the Family Is Health for the Community" is a commonly quoted phrase. And yet, these same hard workers give only lip service to the idea of coördinated effort and reorganizations, and defend the status quo of their own agency. Further discussion with these people revealed that they sincerely believe that a broad recommendation about the desirability of generalizing public health nursing services is not applicable to their specialized services or their local community. "In our organization" or "in this community" are phrases commonly used to introduce a description of a local situation believed by them to be atypical, and yet in reality common to so many areas that it forms a basis for guiding principles on a national level.

Perhaps this reaction has too often been ignored or tossed aside with, "It's the old story, people are more concerned with their own positions than with community needs." We question whether this criticism is fair and whether more regard for the attitudes of all faithful public health workers would not ultimately result in greater progress toward coördinated services. We found that nurses engaged in specialized services believe that the importance of their work and the specialized skills required to do it have been overlooked by those making recommendations. They seem fearful that the service they have helped to build will be lost in a generalized pro-

gram. Too little understanding of what the nurse does in a generalized service has led others to be unnecessarily fearful of the new responsibilities involved. It is recognized that this more detailed interpretation will take valuable time of qualified leaders. However, we believe it is a "must," if successful reorganization of community services is to come about.

Community planning during the war has brought numerous benefits to the public health nursing field. Citizen groups eager to participate in the war effort have perhaps for the first time become interested in all community services including public health nursing. Professional persons have found new opportunities to interpret health services to the community. Agencies have examined their programs in the light of urgent health needs. Citizens have become far more aware of their individual needs, the lacks in existing services, and potentialities for improved resources in community planning. As a result, this immediate post-war period is an opportune time for professional leaders to point the way toward more economical planning with higher quality of service.

#### AIDS TO PLANNING

Pertinent guides and broad recommendations as to standards of service have been provided by our national public health organizations. The fact that these guides and recommendations have had successful application indicates that they are practical and sound. The Subcommittee on Local Health Units of the American Public Health Association has outlined a comprehensive plan for development of local health units for the nation.<sup>1</sup> We can expect this study to hasten the day when every area in the country will have adequate health services. In the meantime, local communities will find in the committee's report helpful sug-

gestions for revising their own community programs and filling unmet needs.

Further direction for communities is available through reports of studies made by the NOPHN. A useful guide for communities to follow in analyzing their own situations and planning to meet them can be found in *Public Health Nursing Care of the Sick*, published in 1942.<sup>2</sup> This report describes communities of varying characteristics, summarizes recommendations common to many of them, and includes patterns of organization which have proved practical and effective. Helpful descriptions of actual pioneering in setting up generalized nursing services within city and county areas have been given to us by the City of Seattle,<sup>3</sup> and by Kitsap County<sup>4</sup> in the State of Washington.

#### FACTORS IN COÖRDINATION

Both citizen and professional groups today are showing a great deal of interest in working toward improved public health nursing services for their communities. However, progress toward improved planning is slow in spite of current interest and these numerous guides. On the basis of our recent experience we believe more thought needs to be given to coöperative effort; the ultimate goal of all public health nursing; the part citizen groups may play and the methods which have been successfully tried.

*Coöperative planning is a first essential* in any community-wide project. Progress depends upon the joint effort of all nursing groups, health officers, professional workers in related agencies, and lay members of the community. This joint effort should promote common knowledge and understanding of existing needs, and arouse interest in providing resources to meet them. Too much emphasis cannot be put upon the decisive rôle which may be taken by representative citizens. Their views are

of the greatest significance in shaping the thought that effects a successful solution.

Another important factor to consider in advancement of public health nursing services is the *contact with individual physicians*. Observation suggests that many members of the medical profession continue to have a vague understanding of the work of the public health nurse and little acquaintance with the policies of their own public health nursing organizations. The individual public health nurse must increase her efforts and utilize every opportunity to interpret her services to the private physician. Too few medical advisory committees are routinely and consistently used for consultation on policies and procedures considered to be within their jurisdiction or for help in interpreting public health nursing to the local medical group.

What is the common goal of all public health nursing? If it is *to provide the highest possible level of nursing service for everyone in the community in adequate amounts and at a cost which they can afford*, then all present services must be evaluated in the light of essential community needs. The goal calls for a community health plan which is economical and effective. It requires that public health nursing programs be flexible to meet changing community needs as determined by vital statistics, morbidity rates, and emergency situations. It means reducing or completely eliminating some services to make way for others that today rank higher in order of importance. Efforts toward attainment of this goal have met with success where public health leaders have been fundamentally concerned with broad objectives and have made practical application of the democratic process.

#### STEPS IN COÖRDINATION

An initial step in the realignment of

community health services is *to organize a planning committee* representing a cross-section of community groups. In selecting members, various religious groups, parent-teachers associations, labor organizations, women's clubs, chambers of commerce, and other health and welfare agencies should be considered. Community nursing councils and health committees of the councils of social agencies provide an effective medium through which to direct efforts of joint study and planning. The value derived from councils depends upon the degree to which public health personnel appreciate the potentialities inherent in these organizations for strengthening community services. The National Joint Committee on Community Nursing Service has recently prepared a guide<sup>5</sup> which should help to promote the establishment of nursing councils in local communities. Concerted effort should be made to have nursing councils organized where they do not already exist.

The responsibility of planning committees will be to study community facilities and present-day standards in public health nursing and to assume leadership for the development of a better program.<sup>6</sup> When a decision on some form of coördinated service and plan of financial support has been reached, a well qualified nurse director should be selected as early as possible. She can help with further planning and continuous interpretation throughout the community. The planning committee will need to be well informed about the various agencies in the community, their objectives, functions, programs, accomplishments, and also something of their philosophy and working relationships with other agencies. It is especially important that public health workers already functioning in the community be kept informed of the committee's plan, as changes or reorganization may affect them as individuals or their agencies.

After the committee has made careful analyses of the community situations and professional workers and the general public have become acquainted, many valuable and pertinent suggestions for reorganization can be expected to come from all groups. It is of the utmost importance that the person guiding the committee offer for consideration plans of organization in comparable communities which have been found through experience to be economical and effective. There are three possibilities: (1) the department of health may assume responsibility for a completely generalized nursing service including bedside care; (2) official and voluntary agencies may be completely independent, but coöperate, and coördinate their various services, and (3) various combination plans of the foregoing may be evolved.

We believe whole heartedly in a generalized and unified service, but are convinced that great care should be taken not to attempt complete generalization before agencies and communities are ready for it. In some communities it would be more practical to work gradually toward a degree of generalization. A simple step in the direction of complete generalization is a plan which provides one nurse director but separate governing boards, funds and field staff for all the services involved. Such a plan has been acceptable where it has been necessary to set up new services for nursing care of the sick, and where the department of health

has not been ready to assume this additional responsibility.<sup>7</sup> This type of plan promotes better nursing leadership, greater coördination, and a higher quality of service at less cost through common administrative procedure than does the continuance of separate nurse direction.

The war emergency tested the effectiveness of national and local health and welfare services. It revealed overlapping and duplication in the face of serious omissions. It demonstrated what can be done when common effort and interests are merged and directed toward a common goal. Now it is up to those concerned with community health to discard outmoded, ineffective patterns, to harness the sources of community strengths revealed by the war, and to inject into today's activities the fundamental principles of social planning. Out of this coördinated program, we may expect even more effective methods of service to evolve.

#### REFERENCES

1. Emerson, Haven. *Local Health Units for the Nation*. Commonwealth Fund, 1945.
2. *Public Health Nursing Care of the Sick*. National Organization for Public Health Nursing, New York, N. Y., 1942.
3. Westman, Ragnar T., and Prindiville, Marguerite. Seattle Nursing Merger. *Pub. Health Nurs.*, June, 1945.
4. Wilson, Russell, M.D., and Anderson, Lila. A Wartime Public Health Nursing Program. *Pub. Health Nurs.*, Apr., 1944.
5. Available from the Committee, 1790 Broadway, New York 19, N. Y.
6. Public Health Nursing Survey Schedules. National Organization for Public Health Nursing, 1945.
7. Administration of Home Nursing by Health Departments. *Pub. Health Nurs.*, July, 1945.

# Venereal Diseases Found in Selective Service Registrants<sup>1</sup>

MAJOR CLIFFORD H. GREVE, MAC

*Medical Section and the Division of Research and Statistics, National Headquarters, Selective Service System, Washington, D. C.*

EXAMINATIONS by Selective Service of more than 15 million registrants since November, 1940, reveal that an estimated 5 per cent have some form of venereal disease at the time of physical examination. The estimated prevalence for white registrants is 2 per cent, while the prevalence among Negroes is 22 per cent. Among Negroes, venereal diseases are the second most frequent cause for rejection.

The awareness of public health officials and top ranking officers of the armed forces to the possible utilization of registrants with a venereal disease resulted in reducing the rejections caused by this particular group of defects, until all but the most complicated cases were acceptable for induction and treatment in the armed forces, pending such time as they became fit for regular duty.

The standards of acceptance which were in effect at the time the Selective Service System began to examine registrants provided for the rejection of registrants with venereal diseases.<sup>2</sup> It is understandable that the peacetime Army had neither the treatment facilities nor the desire to induct men with a venereal disease. The coming of war, however, created an urgent need for an expanded Army and Navy. As a result, registrants who presented evidence of having received adequate treatment for syphilis, in accordance with acceptable Army standards, were inducted for gen-

eral military service. At this time registrants with uncomplicated gonorrhea were not acceptable for general military service, but were acceptable for limited military service, but no limited service men were being inducted.<sup>3</sup> The criteria set up to define "adequate treatment for syphilis" were so rigid that not many registrants having syphilis could meet them; therefore, very few men were inducted under this procedure.

A second change in the standards of acceptance in the fall of 1942 permitted the induction of registrants with uncomplicated gonorrhea to the extent of 2 per cent of registrants reporting for induction.<sup>4</sup> Syphilitic cases were acceptable to the extent that treatment facilities were available. However, registrants with cardiovascular, cerebrospinal, or visceral syphilis were never acceptable.<sup>5</sup> Treatment facilities for handling syphilitic cases still were inadequate, and inductions were not permitted under this provision until new instructions for induction to the limit of available facilities were issued in December, 1942; however, it was March, 1943, before large numbers of syphilitics could be inducted.<sup>6</sup> At that time, a great backlog of rejected syphilitic registrants had accumulated which never was fully absorbed through induction. The high incidence of syphilis among Negroes created a particular problem with regard to absorbing the backlog of rejections among registrants



TABLE 1

*Estimated Number of Selective Service Registrants Ages 18-37 in Rejected Classes Because of Syphilis, Gonorrhea, and Other Venereal Diseases,<sup>1</sup> January 1, 1945*

Principal Cause for Rejection	Number			Per cent		
	Total	White <sup>2</sup>	Negro	Total	White <sup>2</sup>	Negro
Total	4,493,000	3,621,000	872,000	100.0	100.0	100.0
Syphilis	271,100	107,900	163,200	6.0	3.0	18.7
Gonorrhea and other venereal diseases	18,400	7,300	11,100	0.4	0.2	1.3

<sup>1</sup> Includes those in Class IV-F and also those transferred from Class IV-F to the occupationally deferred classes, II-A(F) II-B(F), and II-C(F).

<sup>2</sup> Includes all races other than Negro.

of that race. In May, 1943, the Navy, which prior to this time had not accepted registrants with venereal diseases, began to accept those with acute uncomplicated gonorrhea and those with adequately treated syphilis.<sup>7</sup>

#### NUMBER CURRENTLY REJECTED

On January 1, 1945, an estimated 271,000, or 6.0 per cent, of the 4,493,000 registrants ages 18-37 in the rejected classes were so classified because of syphilis (Table 1). An additional 18,400, or 0.4 per cent, of rejected registrants were classified thus because of other venereal diseases, which include gonorrhea, chancroid, granuloma inguinale, and lymphogranuloma venereum (active). These figures do not include the thousands rejected for venereal diseases at one time or another who later were reexamined and inducted.

#### BLOOD TESTING

The universal blood testing of registrants examined by the Selective Service System set up a milestone in the control of venereal disease. The result was a widespread interest and an effort among the general population to secure serological tests. It also was a valuable aid in supplying accurate data with respect to the prevalence of syphilis among a large part of the male population of the country.

Analyses of the results of serological

tests made during the period from November, 1940, through August, 1941, indicate that 46.1 registrants out of every 1,000 examined had a positive or a doubtful test for syphilis.<sup>8</sup> Approximately three million men 21-35 years of age were examined during that period.

The prevalence of syphilis was 18.6 per 1,000 examinations among white registrants and 245.2 among Negroes, or about 13 times the rate for white registrants. It is possible, however, that the prevalence was increased to some extent by the inclusion of doubtful and confirmatory tests in the data. Testing procedures required all positive or doubtful tests to be confirmed by a second test to determine whether the test was truly positive or truly negative.

The prevalence of syphilis increased with advancing age between the ages of 21 and 36; the rate being 30.1 per 1,000 examinations for registrants 18-25, and 83.5 for registrants 31-35 years of age (Table 2). Registrants under 21 and over 35 years of age represented volunteers, during peacetime, and the prevalence of 55.1 per 1,000 examinations for men under 21 years of age and the rate of 101.9 probably are not truly representative of all men in these age groups. The prevalence among Negroes compared to that of white registrants varied from approximately 19 times the white rate

TABLE 2

*Comparison of Syphilis Detected Rates by Race and Age in First and Second Million Selectee Blood Tests per 1,000 Examined,<sup>1</sup> November, 1940–August, 1941*

Age Groups in Years	Prevalence per 1,000 Examined		
	Total	White <sup>2</sup>	Negro
Total	46.1	18.6	245.2
18–20	55.1	12.3	105.8
21–25	30.1	10.8	191.7
26–30	54.4	22.1	294.8
31–35	83.5	39.9	357.8
36–40	101.9	47.4	375.6

<sup>1</sup> Results of Serological Blood Tests for Syphilis, U. S. Public Health Service: April, 1941, and October, 1942.

<sup>2</sup> Includes all races other than Negro.

in the age group 21–25 years to about 9 times the white rate among registrants 31–35 years of age.

#### REJECTION RATES

Rejection rates for syphilis increased during the first year of war over the peacetime rate, although rates for gonorrhea and other venereal diseases decreased. When the induction of registrants with syphilis actually began early in 1943, the rejection rate for this defect began to decrease and continued to do so until by 1945 it formed a negligible part of the white rejection rate. Syphilis continued to be responsible for an appreciable percentage of Negro rejections, although the syphilitic rejection rate for that race actually decreased at a more rapid rate than did that among white registrants. During peacetime, about 24 out of every 1,000 registrants examined were rejected for syphilis, and 7 for gonorrhea

and other venereal diseases (Table 3). In 1942 (the first year of war), the rejection rate for syphilis increased to 37, while the rate for gonorrhea and other venereal diseases decreased to 4. The rejection rate for syphilis in 1943 was 15 per 1,000 men examined while all other venereal diseases were the cause of only one rejection per 1,000 men examined. In 1944, the rejection rate further decreased to 4 for syphilis and 0.3 for all other venereal diseases. The Negro rejection rates for both syphilis and other venereal diseases showed the same trend as did the rate for white registrants, but during each yearly period they were many times greater than the rate for white registrants.

The increase in the rejection rate for syphilis during the first year of war was the result of three factors: (1) standards of acceptance did not permit the induction of registrants with syphi-

TABLE 3

*Estimated Rejection Rates for Syphilis and Other Venereal Diseases, by Race,<sup>1</sup> 1940–1944*

Year	All Races	White <sup>2</sup>	
		Syphilis	Negro
1940–1941	24.2	8.3	147.2
1942	37.2	14.9	170.5
1943	15.0	6.5	61.7
1944	4.3	2.4	18.6
<i>Gonorrhea and Other Venereal Diseases</i>			
1940–1941	6.7	2.5	40.6
1942	3.6	1.2	18.2
1943	1.3	0.5	6.0
1944	0.3	0.1	1.9

<sup>1</sup> Rate per 1,000 registrants examined.

<sup>2</sup> Includes all races other than Negro.

lis; (2) many men were being enlisted directly by armed forces' recruiting stations and thus removed from the group to be examined by the Selective Service System; and (3) lack of treatment facilities, even after standards of acceptance were amended, limited the number who could be accepted. The rejection rate for gonorrhea decreased since men with gonorrhea were inductible at an earlier date than were those with syphilis; also treatment over a relatively short period of time relieved the symptoms of gonorrhea, and registrants, regardless of a past history of infection, were almost universally accepted, provided there were no indications of the disease. Local health authorities made concerted efforts to treat known cases of gonorrhea which previously had been rejected, and local boards returned such registrants for induction as soon as was possible. Many registrants who were rejected for syphilis were placed under treatment by civilian health officials and thus had received a considerable amount of treatment prior to their induction into the armed forces. In many states cooperative programs existed between state health departments and Selective Service which were designed to place under treatment those registrants who were rejected for syphilis. These programs were established prior to the time that standards of acceptance in the armed forces were changed to permit the induction of syphilitics and were intended to fit these rejected registrants for induction under the rigid standards then in effect.

#### MAJOR SUB-GROUPS OF SYPHILIS

This section includes information on the prevalence of the various types of syphilis among examined registrants and the percentage of syphilis rejections caused by the various types of syphilis. The data on the prevalence of syphilis afford a more nearly complete picture

of syphilis than do the data on rejections, since (1) many men with syphilis were inducted into the armed forces after early 1943, and (2) rejection data are based on the primary defect causing rejection, and many registrants with syphilis were rejected for some other more important defect.<sup>9</sup>

Data obtained from tabulating the results of mass serological tests for syphilis form the most nearly complete index available as to the prevalence of syphilis among men liable for military service. The specific diagnoses of the types of syphilis recorded in the summary of defects on the physical examination report afforded valuable information, both with respect to the possible utilization by the armed forces of syphilitics in military service and as a matter of interest from the public health standpoint. Since syphilis was not always listed in the summary of defects when a positive serological test was found, there is a difference between the prevalence (30.8 per 1,000 examined) as shown in Table 4, and the prevalence of positive serological tests (46.1 per 1,000 examined) as shown in the analysis of blood test reports. These two rates for Negroes are more nearly equal, indicating that syphilis was recorded more generally in the summary of defects for Negro registrants having a positive serological test than was true for white registrants.

The relative importance of the various venereal disease sub-groups, as shown in Table 4, indicates that "other syphilis," consisting mainly of entries describing doubtful serological tests or syphilis unspecified as to form, was the most frequently recorded type of syphilis during peacetime and it was followed in importance by recording of positive serology with no further clinical diagnosis. These two sub-groups comprised more than 97 per cent of all rejections for syphilis and a major proportion of the recorded prevalence. The signifi-

TABLE 4

*Prevalence of Syphilis and Other Venereal Diseases and the Per cent Distribution of Rejections for Syphilis and Other Venereal Diseases Among Selective Service Registrants Examined at Local Boards, November, 1940-September, 1941*

Major Sub-Group	Prevalence per 1,000 Examined			Per cent Distribution of Rejections		
	All Races	White <sup>1</sup>	Negro	All Races	White <sup>1</sup>	Negro
All Syphilis	30.8	11.7	176.7	100.0	100.0	100.0
Cerebrospinal	0.5	0.5	1.1	1.6	3.6	0.6
Cardiovascular	0.3	0.1	1.7	0.8	0.6	1.0
Other types of syphilis	15.7	6.4	86.9	51.3	55.7	49.1
Positive serology (No other findings)	14.3	4.7	87.0	46.3	40.1	49.3
All Other Venereal Diseases	7.3	3.4	36.5	100.0	100.0	100.0
Gonococcus infection	6.7	3.2	32.6	92.3	96.7	89.6
Other venereal diseases	0.6	0.2	3.9	7.7	3.3	10.4

<sup>1</sup> Includes all races other than Negro.

cance attached to the serological test in the diagnosis of syphilis often resulted in failure on the part of the examiner to record histories of infection. It is probable that a large percentage of the men found to have syphilis had not been previously examined or treated for the disease prior to the Selective Service examination. In some states, a check was made against the record of reported cases on file at the state health department, thus revealing a high percentage of cases that never had been reported previously.

During peacetime gonococcus infection comprised more than 92 per cent of rejections for venereal diseases other than syphilis (Table 4). The nature of gonorrhea and the examining procedure in itself made it almost impos-

sible to diagnose all the cases. The absence of prolonged symptoms and the rapid "cure" which may be effected with modern drugs greatly reduced the number of registrants who had recognizable gonorrhea at the time of physical examination. Chancroid, granuloma inguinale, and lymphogranuloma venereum were found 20 times more often among Negroes than among whites and comprised 10 per cent of Negro rejections in contrast to only 3 per cent of white rejections for venereal diseases other than syphilis.

Positive serology remained the most frequently recorded basis for the diagnosis of syphilis during the war and even continued to be the most frequent cause for rejection among registrants rejected for syphilis, despite the fact

TABLE 5

*Prevalence of Syphilis and Other Venereal Diseases and the Per cent Distribution of Rejections for Syphilis and Other Venereal Diseases Among Selective Service Registrants Physically Examined at Local Boards and Induction Stations, 1942-1943*

Major Sub-Group	Prevalence per 1,000 Examined			Per cent Distribution of Rejections		
	All Races	White <sup>1</sup>	Negro	All Races	White <sup>1</sup>	Negro
All syphilis	50.2	20.8	214.7	100.0	100.0	100.0
Cerebrospinal	1.8	1.2	4.8	6.6	13.0	3.2
Cardiovascular	0.2	0.1	1.1	0.5	0.5	0.5
Other syphilis	15.8	6.5	65.9	24.0	23.9	24.1
Positive serology (no other findings)	32.4	12.7	142.9	68.9	62.6	72.2
All other venereal diseases	6.3	2.3	28.7	100.0	100.0	100.0
Gonococcus infection	5.9	2.2	26.6	90.3	96.4	87.9
Other venereal diseases	0.4	0.1	2.1	9.7	3.6	12.1

<sup>1</sup> Includes all races other than Negro.

that under the prescribed standards of acceptance it was no longer considered a cause for rejection after March, 1943 (Table 5). Positive serology and "other syphilis" accounted for more than 85 per cent of rejections for syphilis among white registrants, while among Negroes these types were responsible for over 96 per cent of syphilitic rejections. These percentages are lower than those reported for peacetime, which indicates the increased relative importance of complications of syphilis as causes for rejection after uncomplicated syphilis was removed as a cause for rejection.

The recorded prevalence of all types of syphilis increased over that for peacetime, with complicated types and positive serology showing the greatest gains for both white and Negro registrants. Part of the increased prevalence may have been the result of better recording of data on the physical examination report form.

Gonorrhea continued to be the cause for more than 90 per cent of rejections for venereal diseases other than syphilis, but the percentage decreased for Negroes during wartime, although it remained practically constant for white

registrants. The prevalence of gonorrhea in wartime declined appreciably over that recorded during peacetime.

The trend in the types of syphilis causing rejection during the period of modification in standards of acceptance is presented in detail in Table 6. Positive serology was responsible for a decreasing proportion of syphilitic rejections after April, 1942. The decrease for whites was from 72 per cent in the period April-June, 1942, to 7 per cent in November-December, 1943, while the decrease among Negroes was from 78 per cent to 14 per cent during the same period. On the other hand, neurosyphilis increased in relative importance as a cause for rejection of white syphilitic registrants from 6 per cent in April-June, 1942, to 78 per cent in November-December, 1943, whereas the increase among Negroes was from 1 per cent to 61 per cent during the same period.

It is apparent that the decrease in the importance of rejections based on positive serology alone and the consequent increase in the importance of neurosyphilis did not occur as rapidly among Negro as among white registrants.

TABLE 6

*Per cent Distribution of Types of Syphilis Among Selective Service Registrants Rejected at Local Boards and Induction Stations, April, 1942-December, 1943*

Month of Receipt of Form 221	White <sup>1</sup>					Negro				
	Total	Neurosyphilis	Cardiovascular syphilis	Other	Positive Serology	Total	Neurosyphilis	Cardiovascular syphilis	Other	Positive Serology
April-June '42	100.0	5.6	0.6	21.9	71.9	100.0	0.7	0.2	21.5	77.6
Nov.-Dec. '42	100.0	4.5	0.1	25.5	69.9	100.0	0.9	0.2	26.6	72.3
Jan. '43	100.0	4.7	0.2	22.7	72.4	100.0	0.7	0.1	23.5	75.7
Feb. '43	100.0	8.4	0.2	28.2	63.2	100.0	0.6	0.2	29.1	70.0
Mar. '43	100.0	12.6	0.3	21.8	65.3	100.0	1.8	0.3	21.5	76.4
Apr.-May '43	100.0	27.6	0.7	30.1	41.6	100.0	5.3	0.7	21.5	72.5
June-July '43	100.0	53.2	1.2	18.5	27.1	100.0	11.7	1.6	17.5	69.2
Aug.-Sept. '43	100.0	64.1	2.0	17.7	16.2	100.0	23.9	2.8	23.8	49.5
Nov.-Dec. '43	100.0	77.5	4.0	11.3	7.2	100.0	61.1	12.4	12.8	13.7

<sup>1</sup> Includes all races other than Negro.

## THE OCCUPATIONAL FACTOR

The relationship between syphilis as a cause for rejection and the occupation of the rejected registrant is shown in Table 7. Selective Service policies provide for the deferment of men in essential occupations, which has resulted in fewer men in certain occupational groups being examined than in others; therefore, the occupational groups vary in their representativeness. The farm group probably is the least representative of their group in the general population, as a result of the passage of the Tydings' Amendment in 1942 which provided for the deferment of agricultural workers. This has particular significance for the period shown in Table 7, since a sizable proportion of Negroes

syphilis, but among Negroes the rejection of this group for syphilis was relatively more important than among other occupational groups. Syphilis was the cause of a larger percentage of Negro rejections in every occupational group than among white registrants in the same occupational groups. Among Negro farmers and farm laborers, the percentage of rejections due to syphilis was so much at variance with that of Negroes in other occupational groups, that it appears probable that these percentages are not truly representative of Negro farmers. The fact that mental and educational deficiencies are very prevalent among farm Negroes undoubtedly detracts from the true importance of syphilis in this group.

TABLE 7

*Per cent of Rejections in Major Occupational Groups Due to Syphilis,  
February, 1944-April, 1944*

Occupation	<i>Per cent of Total Rejections Due to Syphilis</i>		
	<i>Total</i>	<i>White<sup>1</sup></i>	<i>Negro</i>
All occupations	1.0	0.6	3.2
Professional and semiprofessional	0.4	0.3	3.6
Farmers and farm managers	0.3	0.2	0.6
Proprietors, managers and officials	0.5	0.4	3.5
Clerical, sales, and kindred	0.8	0.6	7.4
Craftsmen and foremen	1.0	0.7	5.3
Operatives	1.1	0.7	4.2
Domestic and protective service workers	1.2	0.5	8.5
Other service workers	2.8	0.8	5.3
Farm laborers	0.4	0.2	0.8
Laborers, except farm	1.5	0.6	2.7
Students	0.4	0.2	4.0
Emergency workers and unemployed	1.2	0.7	3.6
Nonclassifiable	1.3	0.7	3.8

<sup>1</sup> Includes all races other than Negro.

are farmers and the incidence of syphilis is very high among registrants of that race. Among white registrants, "other service workers" had the highest percentage of rejections due to syphilis, while domestic and protective service workers had the highest percentage among Negroes. Syphilis was a rather unimportant cause of rejection among farmers and farm laborers of both races. White professional and semiprofessional workers were infrequently rejected for

## SUMMARY

A review of the prevalence of venereal diseases and the rejection rates for that cause among Selective Service registrants shows that:

1. The majority of rejections for syphilis were made on the basis of a positive serological blood test alone.

2. Syphilis was the principal cause for the rejection of 271,100, or 6.0 per cent of those registrants in rejected classes on January 1, 1945. As of the same date there were 18,400 registrants, or 0.4 per cent of all rejected

registrants, who had been rejected for gonorrhea and venereal diseases other than syphilis.

3. Approximately 5 per cent of the registrants were found to have a venereal disease at the time of physical examination.

4. The rejection rate for syphilis decreased from 24 per 1,000 examined in peacetime to 4 per 1,000 examined in 1944. The rejection rates for gonorrhea and other venereal diseases decreased from 7 to 0.3 per 1,000 registrants examined during this same period.

5. The decrease in the rejection rate was the result of changes in standards of acceptance which ultimately provided for the acceptance of registrants with all except complicated forms of venereal diseases.

6. Venereal diseases are reported more frequently among Negroes than among white registrants and the rejection rates also are consistently higher among Negro registrants.

7. The prevalence of syphilis increases with advancing age, although the ratio between the white and Negro prevalence rates decreases from a Negro rate which is 19 times the white rate in the age group 21-25 years to about 9 times the white rate among registrants 31-35 years of age.

8. Among white registrants gainfully employed, the percentage of rejections for syphilis was highest among "other service workers" and lowest among farmers and farm laborers and students, while among Negroes it was highest among domestic and protective service workers and lowest among farmers, farm managers, and farm laborers.

#### REFERENCES

1. This report is based on sample studies of the results of examination recorded on *DSS Forms 200*,

Reports of Physical Examination, for Selective Service registrants physically examined at local boards during 1940-1941, and *DSS Forms 221*, Reports of Physical Examination and Induction, for registrants examined at local boards and induction stations during 1942-1944. Coverage of the sample studies varies from 10 to 25 per cent of the examinations. Additional data on venereal diseases among Selective Service registrants are contained in the following bulletins published by National Headquarters of the Selective Service System: Folk, O. H., McGill, K. H., and Rowntree, L. G., *Medical Statistics Bulletin* No. 1, Analysis of Reports of Physical Examination, November 10, 1941; Edwards, T. I., McGill, K. H., and Rowntree, L. G., *Medical Statistics Bulletin* No. 2, Causes of Rejection and Incidence of Defects, an Analysis of Reports of Physical Examination from 21 Selected States, August 1, 1943; Greve, C. H., McGill, K. H., and Rowntree, L. G., *Medical Statistics Bulletin* No. 3, Physical Examination of Selective Service Registrants During Wartime, November 1, 1944.

2. *Mobilization Regulations No. 1-9*, August 31, 1940. War Department.

3. *Mobilization Regulations No. 1-9*, March 15, 1942. War Department.

4. *State Director Advice No. 77*, September 26, 1942. Selective Service System.

5. *Mobilization Regulations No. 1-9*, October 15, 1942. War Department.

6. *State Director Advice No. 126*, December 17, 1942. Selective Service System.

7. *War Department Letter AG 372.02*. PR-I, May 25, 1943.

8. Based on data obtained from the serological blood test reports of the first two million Selective Service examinations. Additional information on the results of serological tests for syphilis, by states, cities, and counties may be found in the two volumes: *Results of Serological Blood Tests for Syphilis on Selective Service Registrants* issued by the U. S. Public Health Service, April, 1941, and October, 1942.

9. Procedures for selecting the principal cause for rejection are explained in *Methods Used in Processing Data from Physical Examination Reports of the Selective Service System*, Edwards, T. I., and Hellman, L. P. *J. Am. Statist. A.*, Vol. 39, June, 1944, pp. 165-182.

## Afebrile Parasitemia in Imported Vivax Malaria

HERBERT B. CHRISTIANSON, MAJOR, M.C., HARRY H. GORDON, LT. COLONEL, M.C., WORTH B. DANIELS, COLONEL, M.C., AND STUART W. LIPPINCOTT, LT. COLONEL, M.C.

*Army Service Forces, Eighth Service Command, Harmon General Hospital, Longview, Tex.*

THE possibility that military personnel returning from areas where malaria is hyperendemic, may introduce the disease into uninvolved areas of the United States and increase the incidence in presently endemic areas has been fully recognized by military and public health authorities.<sup>1</sup> The proven transmissibility of some imported strains of vivax malaria to American mosquitoes and by them to American soldiers<sup>2</sup> has indicated the wisdom and necessity of improving and extending mosquito control measures to prevent spread of the disease.<sup>3</sup> In spite of steps already taken, occasional secondary cases may be expected to develop; a few such cases have been reported.<sup>4</sup> It has been pointed out that since quinacrine is highly effective in ridding the blood of parasites, prompt diagnosis and treatment of the patient with a clinical attack will make him an unlikely source of infection of mosquitoes.<sup>5</sup> The question then arises as to the frequency of patients who without symptoms will have parasitemia with gametocytes and thus serve as a potential source of infection of mosquitoes.

The presence at Harmon General Hospital of a group of patients being studied for relapse, afforded an opportunity to obtain data bearing on this problem. For a period of 5 months approximately 200 patients who had

had proven relapses in this hospital of vivax malaria of either Pacific or Mediterranean origin, had blood smears examined twice weekly for malarial parasites. Thick smears were always made in the morning and examined the same day. If parasites were found, the patient was immediately admitted to a ward for observation. Thick and thin smears were then taken at 12 or 24 hour intervals and the presence or absence of gametocytes noted. Oral temperatures were taken at least four times daily, and a daily record was kept of symptoms. No patient was treated unless he developed an oral temperature over 100° F. or until he had had a parasitemia without fever for 7 days. No attempt was made to determine how much longer than 7 days the patient might have continued with afebrile parasitemia nor how many patients might have become negative spontaneously without treatment. The results are presented in Table 1.

It is seen that during a 5 months period in which approximately 200 patients were having smears examined twice weekly, 81 were admitted because of a positive smear without fever. Of these, 68 developed fever over 100° F. within 2 (range 1 to 7) days after admission and were started on treatment. Only 13 patients, or 16 per cent of the total group of 81, had parasitemia without fever for 7 days. Four, however,



TABLE 1

*The Occurrence of Gametocytes in Routine Blood Smears of 81 Patients with Afebrile Relapses of Vivax Malaria*

	Patients Who Developed Fever			Patients Without Fever for 7 Days		
	Pacific	Mediterranean	Total	Pacific	Mediterranean	Total
Source of malaria	53	15	68	8	5	13
No. of patients with gametocytes	3	4	7	1	3	4
Per cent of 81 patients with gametocytes			9			5
Total smears examined			203			87
Per cent of smears with gametocytes			3			7
Average days without fever			2			7

complained of other symptoms which, from previous experience, could rightfully be attributed to malaria. These four men would probably have taken sufficient quinacrine or quinine to rid their blood of parasites without medical advice. Soldiers who have had malaria frequently indulge in self-medication and it is known from unpublished studies that doses of quinacrine smaller than those customarily recommended will usually temporarily eliminate parasitemia.

Of 61 relapses of Pacific malaria recognized by the finding of a positive smear on routine examination, 8, or 13 per cent, went 7 days without fever, as compared with 5, or 25 per cent, of the 20 Mediterranean relapses. Although the groups are small, the data support the clinical impression gained over a period of approximately one year, that parasitemic relapses without fever were more frequent in Mediterranean than in Pacific malaria. It is not to be inferred that 25, or 13 per cent, respectively, of all relapses of Mediterranean and Pacific malaria are "silent." Actually, during the 5 month period of observation, over twice as many patients were admitted to the treatment ward because of a full blown malarial attack as were admitted because of a positive smear found on routine examination. The proportion of patients admitted because of positive smears prior to development of full blown symptoms would probably have been increased, however, if smears had been

taken more frequently than twice weekly.

Of the total group of 81 patients, 11, or 14 per cent, developed gametocytes and 4, or 5 per cent, were in the group who had no fever. Gametocytes were found in 3 of the 5 afebrile Mediterranean relapses and in only 1 of the 8 Pacific relapses. The higher incidence of patients with gametocytes in the "silent" cases may be explained by the fact that these patients went without treatment long enough to permit an average of seven smears per patient as compared with only three smears per patient in the group who developed fever in an average period of 2 days. Three per cent of the smears in the group who developed fever showed gametocytes as compared with 7 per cent in the afebrile group. This increased incidence of gametocytemia in patients with asymptomatic parasitemia may explain the higher percentage of infected mosquitoes reported by Watson for such a group.<sup>6</sup> This author further reports that 11.8 per cent of mosquitoes fed on 117 cases of relapsing Pacific vivax malaria became infected, but since the percentage of patients who yielded infected mosquitoes is not stated, the results cannot be compared with those of this study.

Although the demonstration of gametocytes in routine examinations of blood films is not absolutely necessary for infection of mosquitoes, in general the infectiousness of a patient's blood depends upon the number of gameto-

cytes present.<sup>6</sup> Therefore, it seems fair to conclude that the great majority of these patients (85 to 95 per cent) whose relapse was first recognized by parasitemia, probably constituted little menace as far as the natural spread of the disease is concerned. The situation in American soldiers who are promptly treated for attack is very different from that in repeatedly infected, untreated natives, who frequently have parasitemia without symptoms.

Though the data presented allow optimism, they do not mitigate the need for expansion and maintenance for good peacetime standards of mosquito control.<sup>7</sup>

#### REFERENCES

1. a. Simmons, J. S. American Mobilization for the Conquest of Malaria in the United States. *J. National Malaria Soc.*, 3:7, 1944.
- b. McCoy, O. R. The Malaria Control Program of the Army, *ibid.*, 3:11, 1944.
- c. Brown, O. J. The Malaria Control Program of the Navy, *ibid.*, 3:15, 1944.
- d. Freeborn, S. B. The Malaria Control Program of the U.S.P.H.S. Among Civilians in Extra-Military Areas, *ibid.*, 3:19, 1944.
2. a. Young, M. D., Stubbs, J. H., Moore, J. A., Ehrman, F. C., Hardman, N. F., Ellis, J. M., and Burgess, R. W. Studies on Imported Malaria: I. Ability of Domestic Mosquitoes to Transmit Vivax Malaria of Foreign Origin. *J. National Malaria Soc.*, 4:127, 1945.
- b. Watson, R. B. Observations on the Transmissibility of Strains of Plasmodium Vivax from Pacific War Areas by *Anopheles Quadrimaculatus*. *Am. J. Trop. Med.*, 25:315, 1945.
3. Williams, L. L., Jr., and Hollis, M. D. Malaria Control in War Areas. *J. National Malaria Soc.*, 2:5, 1943.
4. Osgood, S. B. Malaria and Returned Soldier. *J.A.M.A.*, 128:512 (June 16), 1945.
5. Gordon, H. H., Marble, A., Lippincott, S. W., Hesselbrock, W. B., and Ellerbrook L. D. Clinical and Laboratory Studies of Relapsing Vivax Malaria of Pacific Origin. *New England J. Med.*, 234:519 (Apr. 18), 1946.
6. Watson, R. B. On the Probability of Soldiers with Pacific Plasmodium Vivax Malaria Infecting *Anopheles Quadrimaculatus*. *J. National Malaria Soc.*, 4:183 (Sept.), 1945.
7. Marble, A. Postwar Medical Problems. *Dallas M. J.*, 30:116 (Oct.), 1944.

## University of Michigan Announces In-service Training Course in Housing

The School of Public Health of the University of Michigan announces an In-service Training Course in Housing to be held in Ann Arbor, August 27-29.

"The purpose of the course is to bring together in one place in a well ordered and integrated unit the essence of the research study and experience that has accumulated in the more recent years from the concentrated effort that has been focused on the problem of housing." The course has been planned with the needs of administrative public health officials, especially administrative health officers and engineers, in mind. The material to be presented

may prove to be familiar to students of housing, but in most respects new to health officials.

Both lectures and discussions are scheduled. The subjects will include considerations of basic public health and sociologic factors underlying the need for better housing, standards, housing codes, and methods of appraisal of existing dwellings. The lecturers and discussion leaders include well known experts in various phases of housing.

Anyone desiring further information can obtain it by writing to H. E. Miller, School of Public Health, University of Michigan, Ann Arbor, Mich.

# Health, Education and Security— Some Post-war Perspectives\*

WATSON B. MILLER

*Federal Security Administrator, Washington, D. C.*

THERE are special reasons for counting it a privilege to open this 44th Annual Conference of State and Territorial Health Officers. No year in the world's history has been so eventful as the 12 months since you met last April. During this short time we have seen the collapse of both Germany and Japan, and the opening of the long and difficult, but surely successful, return to the ways of peace. Or perhaps "return" is the wrong word. What the world is really engaged in is a pioneer struggle to explore new and untried ways of peace on a new and unprecedented world-wide front.

These events have had their counterpart within the fields where the Federal Security Agency is concerned. Along with the rest of the nation's public and private business, our job—in education, in social security, and in health—has been going through a re-conversion process, as you who are out on the firing steps know even better than I. We are feeling the changeover in many ways.

There have been shifts in personnel all along the line. Men are returning from military duty as seasoned veterans. In the Federal Security Agency, as no doubt in your state agencies, they are helping us to plug the wartime gaps in staff, and to build up our depleted ranks.

Paralleling the veterans' return, the

Procurement and Assignment Service<sup>1</sup> has been winding up its affairs—terminating one of the outstanding programs of professional coöperation with government that made the nation's all-out mobilization an unprecedented success.

As some return again to their old places, others move on to the outposts of peacetime readjustment. Paul McNutt—who guided the Federal Security Agency through its first years, who took on the war man power problem at its height and saw it through to war's end—last fall was assigned by the President to one of the nation's most difficult and delicate areas of post-war readjustment. In spite of all regrets, we could but give our first Federal Security Administrator a heartfelt God-speed when he returned to the Philippines to take up again the duties of High Commissioner during this crucial period.

I am deeply mindful of the obligation that has been placed upon me in following him. Without the experience gained in the years I served under him in the Federal Security Agency, without the generous coöperation and support for which both of us have always counted on you, as on other state officers who are also our partners, I would have even more trepidation in shouldering a task of such magnitude.

The Federal Security Agency's job has immediate implications and potentials for the future which, in my estimation—and I speak with all humility—place it right out in the front line of

\* Meeting of State and Territorial Health Officers, April 8, 1946. (Footnotes bring factual data up-to-date, as of June 1, 1946.)

national concern. As evidence of this fact, consider how repeatedly in the 9 months since VJ-Day, public issues have had a direct and inescapable impact upon our work—and yours.

Three times during this period the President has focused the attention of the Congress and the people upon urgent, unmet needs in health, education, and security.

The first of these occasions was his message of September 6, less than a month after the fighting stopped. With the guns hardly stilled, he called for legislation on this broad front to implement and give substance to what President Roosevelt had called the "Economic Bill of Rights."

This was followed by the historic Health Message of November 19—historic because it was the first time a Presidential message to the Congress had ever been devoted exclusively to health, and because it proposed the broadscale program which people like you have long known is necessary.

Again in his comprehensive message on the State of the Union, transmitted to the Congress on January 21, Mr. Truman highlighted the key importance of these needs. In his own summarization, he said:

"Our basic objective—toward which all others lead—is to improve the welfare of the American people. In addition to economic prosperity, this means that we need social security in the fullest sense of the term; the people must be protected from the fear of want during old age, sickness, and unemployment. Opportunities for a good education and adequate medical care must be generally available."

The President has not been alone in this concern for health, education, and security. Legislative interest has been equally active, and an unprecedented number of bills in this field are now before the Congress.

Hearings before the Ways and Means Committee on expansion of the social security system began late in February

and after a brief recess are again under way. Early in April hearings started on Senate 1606—the National Health Bill introduced by Senators Murray and Wagner, and companioned by the similar bill which Representative Dingell has introduced in the House.<sup>2</sup>

Meantime, two other major pieces of health legislation are still further under way. The Hospital Construction Bill has passed the Senate and hearings have been held in the House; the Mental Health Bill has passed the House and hearings have been concluded in the Senate.<sup>3</sup>

I should also mention one other Bill which, though on the periphery of your field is of considerable interest to you. I refer to the proposal for a permanent federal unit to carry on the Social Protection program. Hearings on this Bill have been completed in both Houses, and the Senate Committee has already unanimously reported on it favorably. I am glad to have this opportunity to express my thanks for the support which many of you have given to this proposal. It is a large factor in the encouraging progress the Bill has made so far.

In stressing broad social goals, this measure reflects the changing emphasis which has been shaping the Social Protection program for some months past. As you know, when it was first set up 5 years ago, Social Protection was regarded as part of the all-out effort to meet the wartime emergency in venereal disease control.<sup>4</sup> With the cooperation of the Army, the Navy, and state and local health officers, houses of prostitution were closed in some 700 communities. Though this was a substantial aid to the control program, the functions of Social Protection in this connection were quite naturally questioned by some health officers.

As the peak of this wartime hazard has passed, Social Protection has been able to devote more attention to prosti-

tution and its attendant vice and crime, as problems in and of themselves. Rehabilitation has been increasingly emphasized, and efforts have been directed toward problems of promiscuity, juvenile delinquency, and family disintegration.

This policy is embodied in the new Bill; it makes no reference to venereal disease control, and the responsibility of the Social Protection Division which would be set up in the Federal Security Agency is defined as technical and professional assistance to states and communities in these social aspects of the overall problem. If the new division is established, it should strengthen the two-way coöperation between health officers and social protection representatives.

So much for legislative developments since VJ-Day. Though I have only been hitting the high spots, they serve to indicate the sharp upswing of interest and the widening perspective of government services to promote health, education, and security.

But as you and I well know, government services, however necessary, do not get very far merely on public interest and their own good intentions. Laws are not equipped with self-starting or self-operating mechanisms; they must be administered—and from that simple, inescapable and all too obvious fact stem about 99 per cent of all the headaches which our jobs sometimes seem to entail.

It may be cold comfort, but nonetheless worth remembering, that these headaches are not confined to our own field. To some extent, they are inevitable in any operation—government or non-government—that takes in millions of people and covers as much territory as the U.S.A. But good organization can do a lot to iron out the rough spots and relax the bottlenecks.

It is encouraging, therefore, that the current concern to extend the scope of

health, education, and security services has been paralleled and complemented by concern to improve administrative organization. This problem, like that of extending services, has had the attention both of the President and of the Congress. Following a Presidential request, the Reorganization Act of 1945 was passed just before the end of the year, giving the President authority to realign federal agencies. Within certain limits, he is empowered to regroup government agencies according to their major purposes, in the interests of economical and efficient administration and the orderly transition from war to peace. The Executive Office has been engaged for the past couple of months in a thorough-going study of improvements that might be made pursuant to this law. But since this study is still in process, we do not yet know how the eventual outcome will affect our own operations.<sup>5</sup>

Public interest in reorganization has not been limited, as the President's reorganization plans must be, by the provisions of this Act. It has gone on to lively consideration of a new Executive Department, covering this broad field of health, education, and security. As you probably know, the Reorganization Act expressly reserves from the authority conferred on the President that of creating any new department. As a matter of fact, the establishment of a department is clearly a matter for Congressional action: and no one, so far as I know, has any wish to upset this sound legal and historical precedent. But in recent months, there has been an active revival of proposals, like those first put forward 10 years or so ago, to encourage Congressional action according Cabinet status to this area of the federal service.

This is all part of a natural evolutionary process. Even at the time the Social Security Act was passed in 1935, experienced observers were pointing out

that this broad series of services could operate more effectively as members of the same family. The earlier Reorganization Act made this possible, and the Federal Security Agency was set up in 1939. But within less than 3 months, before the several members of the family had really had a chance to get acquainted with each other, the fighting had begun in Europe, and practically the whole lifetime of the Agency has been colored by the progressive emergencies of these wartime years.

Now, with the current upsurge of pent-up interest in health education, and social security, the possibility—and, as many think, the urgent need—for departmental organization has again become a subject of public discussion. Many national organizations have endorsed the idea, among them the Women's Foundation and the American Public Welfare Association, both of which have made public specific proposals for such a department.

Well, these are just some of the things going on in the great arena of national affairs which directly affect our tasks and yours—which in their import for the future hold forth great responsibilities and opportunities for all of us, and great hopes for the furtherance of the general welfare.

In trying to gather together all these threads that are weaving a new pattern of services to promote the general welfare, I would not give you the impression that we in the Agency have been sitting back passively. On the contrary, we had foreseen each of the major developments I have just been reviewing; and, as they emerged for public discussion, they have found us prepared. What I have been trying to do so far this afternoon is to sketch the background, to refresh our perspective on the tasks in which we are presently engaged. Within the Federal Security Agency, these tasks include not only the day-to-day operation of the federal

share in programs which are in the main carried out through the states. They include also the equally continuous and intensive study of problems both of program and administration, and the making of official recommendations on request of the President or the Congress. On all these fronts, the past year has pressed us hard; and I think I can say that our staff has measured up to the demands placed upon it.

I need not review with you the research on health and on social security or the recommendations which the Public Health Service and the Social Security Board have made. You might, however, note again in passing that in their main outlines, the proposals now before Congress clearly reflect these findings and recommendations.

What I want to do now is to bring you up-to-date of some of our thinking which has been less publicized. We have been reexamining the premise on which the Federal Security Agency was founded. We have been unwilling to coast along, merely taking it for granted that the Agency's initial authorization was right in assuming that it is "necessary and desirable to group together . . . those agencies of the Government, the major purposes of which are to promote social and economic security, educational opportunity and the health of the citizens of the Nation." We have been trying to get down to first principles—and we think we have, to a very considerable extent. In the process, we believe we have substantiated the premise on which the Agency was founded; and we have uncovered some pretty solid common ground on which to build both broader services and better administration.

In upholding the conclusion that this broad view should be maintained within whatever departmental framework is eventually established, I am aware that we are following a different line of reasoning from that which many of you

have held. You would like to see public health accorded Cabinet status—and so would we. Where we do not all see eye-to-eye is on the question of separation—of divorcing health from education, welfare and social security, and setting up a department exclusively for this one segment. After months of earnest study, we believe that the weight of experience is on the other side. I tried to summarize some of these considerations for Dr. Getting last November; and because it is very much to the point, I should like to repeat in part what I wrote to him then:

"Many Government services," I pointed out, "fall partly in the field of health and partly in other fields. This is conspicuously true of the work of the Food and Drug Administration and the Office of Vocational Rehabilitation. Health education is of concern to the Office of Education, while there are important health aspects of the social insurance and public assistance programs administered by the Social Security Board. All of these units of Government would presumably be excluded from a department of health; all of them, I am convinced, would suffer in consequence.

"... Such a divorcement would have a similar effect on our health work itself. I believe that it too would suffer. Just as the causes of public health hazards may be economic and social as well as strictly 'medical,' so the effects of public health work are reflected in economic and social betterment as well as in improvement of physical well-being. Since public health does not exist as a thing apart in the everyday life of the people, it would seem less than realistic to isolate it in the Government structure. Particularly as it concerns our planning for the future, our work in the field of health will benefit from a close coördination with that in the fields of education and social security."

Further study since that letter was

written has amplified and supported the conclusion that this partnership of health, education, and security stems from fundamental relationships in our national history and our common human needs.<sup>6</sup>

Basic authority for federal concern in this field rests upon the concept of the general welfare embodied in the Constitution. All of these services with which we are concerned were really created for no purpose short of "promoting the general welfare" in the broad Constitutional sense. They represent what Abraham Lincoln called "the legitimate object of Government"—in that they do for the people what they need to have done, but cannot do for themselves alone.

This "legitimate objects of Government" seems to apply here with special urgency, since health, education, and security, more than any other public services, affect individuals and families in their fundamental character as human beings. Their common purpose is to promote the welfare of people simply as people.

The need for coördination within a clear-cut, comprehensive framework will become more evident—and still more urgent—as the scope of these programs is expanded. And they are bound to grow, for the number of people affected will increase simply with the passage of time, even if nothing like the legislation now before Congress is ever enacted into law.

Nor is this interrelationship confined to federal activities. "Combined operations" are equally necessary to forestall lopsided overemphasis and make for constructive balance in state programs. The imposition of barriers anywhere along the line of federal and state administration only confuses the issue and impedes the various services by setting them at cross purposes. As the integration of federal activities improves, state and local administration

should become simpler, more flexible, economical and effective. And the net result should be that the people will get an increasing return on their investment.

Repeatedly highlighted by the aftermath of World War I, by the repercussions of the depression, and by the critical strains placed on community services during recent war years, this truth has been driven home: health, education, and security cannot be isolated. By now we have a good deal of experience which serves to clarify their common characteristics and define the common ground on which they stand.

For one thing, there appears a clear-cut line of demarcation between these general services representing the common denominator of universal human needs, and special services geared to the needs of certain groups—of farmers, for example, or wage earners in industry. Government aid to farmers, or the “little business” measures of recent war years, for instance, certainly promote security; but they do not come within our area because each is directed to a group interest—rather than to the general welfare.

A second point common to programs within this area is that health, or education, or security is an avowed and *major* concern, rather than a by-product. The Tennessee Valley Authority, for example, contributes to health, education, and security; but it does not belong here because its major concern is with the use of natural resources, and these benefits, however important in themselves, are in a sense derivative.

A third characteristic of all these programs is that, though national in scope, they are local in application. They achieve their end-results in terms of what actually happens in the local communities where people live. Of course, this is also true of other programs; but it seems particularly significant in these services which must be both accessible and flexible if they are to realize their

purpose for the individuals and families concerned.

The established American device for meeting nation-wide local needs is the grant-in-aid principle—which, by the way, originated in this area. The great expansion of federal aid programs in recent years has occurred largely within this field, and today this principle is more extensively applied here than in any other government activity.

All in all, the Federal Security Agency administers 10 grant programs, representing federal appropriations of more than half a billion dollars. I am sure you would tell me that, from the viewpoint of the states, all such grants should be based on a coördinated policy of state-federal relations in health, education, welfare, and social security. And we here in the Federal Security Agency would agree. With some 70 per cent of our total budget devoted to these grants, we have a tremendous stake in the continuing improvement of this whole system. We have a stake in efficient administration of this very substantial investment. Beyond that, we have a stake in joining with you to see that the citizens get full measure, in terms of benefits and services.<sup>7</sup>

The case for making the area of public responsibility as broad as the area of risk has been further underscored by trends which have long been gaining impetus. Increases in the span of life not only bear evidence to gratifying advances in health; they also point up changes in individual and family needs for security. So also continuing advances in education foreshadow the expanding needs of the future. Illiteracy is all but wiped out and at least 80 per cent of our young people now enter high school. The way in which returning GI's have seized upon the chance to go back to school indicates that this up-swing will be accelerated; but it also points up some of the obligations of education beyond the three R's—in the



broad realm of the general welfare. And so the circle of our interest fans out. As a world leader looking to the principles of democratic government for its present and future strength, the United States must demonstrate the capacity of the American people to serve their own best interests through the established pattern of American Government.

The evolution of this broad area of public service, the definition of its boundaries, and the improvement of its operation present inescapable challenges to us all. We can meet these challenges—if our advance is based squarely on experience—on the combined experience of the federal agencies, the states, and the local communities where all these activities must measure their end-results; above all, on the experience of the people who have called upon government to do for them in this field what they need and want to have done, but cannot do unaided. Whatever the future of these programs, it is *one* future—in government organization, as in the lives of the people served.

#### NOTES

1. On May 17, 1946, the Directing Board of the Procurement and Assignment Service held its final meeting, and on June 30, the federal administrative office will close its books. The Board's Chairman, Dr. Frank H. Lahey of Boston, has been awarded the Medal of Merit by the President, for his personal devotion and the outstanding service of the Board.

2. After a brief recess, the hearings are continuing into June.

3. During May the Hospital Construction Bill was reported to the full House Committee by the Subcommittee; the Mental Health Bill was reported out by the Senate Committee.

4. Recent legislation removes the termination date from the May Act, passed in 1941, as an emergency measure for the war period. This law prohibits prostitution within such reasonable distance of military or naval areas as the Secretaries of War

and Navy determine necessary; it authorizes and directs the Federal Security Administrator, together with the two Secretaries, "to take such steps as they deem necessary to suppress prostitution . . . and to accept the cooperation of the authorities of States and their counties, districts and other political subdivisions in carrying out the purposes of the Act." Cooperation of the local, state, and federal agencies concerned has been so successful that during the entire period of the war it was necessary to invoke federal action in only two instances.

5. Three Reorganization Plans were transmitted to Congress by the President on May 16, 1946. Unless disapproved by Congress, the Plans go into effect 60 days after this transmittal date.

Reorganization of the Federal Security Agency is provided for under Plan No. 2. Major changes include: transfer to the Federal Security Agency of the Children's Bureau from the Department of Labor, except for its Child Labor functions, of Vital Statistics functions from the Bureau of the Census in the Department of Commerce, and of the functions of the United States Employees Compensation Commission, with abolition of the Commission as such and appointment of an appeals board; abolition of the Social Security Board as a legally constituted entity within the Federal Security Agency and transfer of its functions to the Federal Security Administrator; authorization for the appointment by the Administrator of two additional assistant administrative heads of the Agency; and provision for the coordination of the Agency's grant-in-aid programs through the establishment by the Administrator of uniform standards and procedures under which participating state agencies may submit a single plan for such grants.

In his accompanying Message, the President defines "the basic purpose of the Federal Security Agency" as "the conservation and development of the human resources of the Nation," and itemizes the following functions as coming "within that broad objective"—child care and development, education, health, social insurance, welfare, and recreation. Emphasizing the fact that the promotion of these services "is a vast cooperative undertaking of the Federal, State and local Governments," the Message points out that "inconvenience and confusion for all concerned can be avoided" by the proposed coordination of grant-in-aid procedures and state plans. It describes the current reorganization as "a second step in building a central agency for the administration of Federal activities" in this field, and concludes with a statement of the President's intention soon to "recommend to the Congress that legislation be promptly enacted making the Federal Security Agency an Executive Department" on the grounds that "the significance [of its services] for the future of the country demands for it the highest level of administrative leadership and a voice in the central councils of the Executive Branch."

6. See the summary of the President's Reorganization Message under footnote 5.

7. See footnote 5, for the provision on coordination of grants-in-aid under Reorganization Plan No. 2.

# Medical Service Plans Across the Country\*

W. PALMER DEARING, M.D., F.A.P.H.A.

*Senior Surgeon, USPHS, Deputy Chief, Division of Public Health Methods,  
Bethesda, Md.*

RECENT developments in the field of national health emphasize the timeliness of this discussion of medical service plans. President Truman's Health Message to Congress on November 19<sup>1</sup> and various legislative proposals made since that time have focused the attention of the health professions on methods for providing adequate medical care to the people of this country.

In spite of the ambitious title, however, it is impossible in the space available to review, even in summary, all of the 32 non-profit community medical plans now in operation and the several more which are planning to open their doors.<sup>2</sup> Moreover, information current today would be out of date before it could be printed.

The only practical approach, therefore, is to discuss some general features of the various types of medical service plans, and to indicate lessons that have been learned from past experience. We need constantly to remind ourselves that this field is so new that there are no experts—it behooves us to study and learn as we proceed along the way to realization of our goals in national health.

## SIGNIFICANT GENERAL CHARACTERISTICS

First, only medical service plans which provide some method of prepayment for the costs of physicians' services, as distinguished from payment for

hospital expenses or compensation for disability, will be considered here. Before proceeding to the plans themselves, however, it will be useful to enumerate some of their significant characteristics, which affect not only their business success but also their social value. Four types of characteristics suggest themselves: (1) coverage, both as to population and services, (2) financing, (3) organization of services, and (4) utilization of services.

1. *Coverage*—(a) *Population*. Plans open to the entire population of an area for enrollment are rare. To avoid enrollment of only unhealthy subscribers, many plans are confined to employed persons or to persons in groups, such as employees of a single factory, etc. Population segments frequently excluded are: dependents, persons under or over specified age, persons outside of defined groups, and persons who fail to meet specified physical standards. In addition to the limitations imposed by plan contracts, the cost often prohibits participation of low income families most in need of protection. Some plans limit enrollment to persons with income below a specified ceiling.

(b) *Services*. Complete care in home, office, or hospital, with preventive services, and diagnostic and other specialist services including x-ray, pathologic examinations, etc., is rarely furnished, either because of financial limitations or because personnel and facilities for complete care are not

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available. Common exclusions are: home and office care; drugs; x-ray and other special diagnostic procedures; care of conditions known to exist before enrollment, such as hernia and other elective surgery; dental care; chronic illness; conditions which develop within a specified waiting period after enrollment.

Most commercial and certain types of non-profit plans provide no service at all, but indemnify the subscriber at specified rates for various illnesses, leaving him to make his own financial arrangements with the physician. Some plans provide service to subscribers with incomes below and cash indemnity to those above a specified limit.

2. *Financing*—Many non-profit plans receive grants to underwrite initial expenses. Subscriber income may be collected by payroll checkoff, by individual payments at periodic intervals, or through fraternal or other organizations which collect dues. For employed persons, the assumption of costs by the employer varies from zero to 100 per cent.

Payments to physicians may be by fee-for-service, with or without proration if bills exceed income from subscribers; by a fixed amount per year for each person in the practice of a given physician or group (capitation); by salary; or by various combinations. Some plans are served by groups of physicians which collect service or capitation fees and allocate the income within the group.

Plans vary greatly as to the proportion of payments by subscribers which is spent on benefits. Overhead costs of enrollment and administration differ widely, and are of real concern to the subscriber.

3. *Organization of Services*—The extent to which plans stimulate better organization and quality of medical service varies greatly. Some plans encourage or even exclusively utilize

group practice; some bring in specialists for consultations. Some operate without any effect whatever on organization, simply utilizing what already existed in the area. Organization also varies as to geographic coverage; some sparsely settled areas are served by local plans without resources in specialists or hospitals beyond the county line; other plans can call upon service from anywhere in a large medical trade area.

Organization may be such that administration is controlled by the physicians, by the subscribers, by management, or by joint action of the groups in various combinations.

4. *Utilization*—This is the ultimate test of any plan. Growth, proportion of eligible population covered, and turnover are all indications. Over-utilization, actual or fancied, may be a problem in the more comprehensive plans. Group practice is sometimes used to control over-utilization of specialists. Controls by education through active subscribers' committees, or by financial restraints such as extra fees for first visits, home visits, or excess visits may be applied.

#### THE SITUATION TODAY

Turning now to the situation as it exists today, let us risk over-simplification and classify medical service plans into five groups, indicating approximate population covered on January 1, 1945, as estimated by Reed<sup>2</sup>: (1) commercial insurance, 5,000,000; (2) industrial plans, 1,900,000; (3) private group clinics and consumer sponsored plans, 495,000; (4) community medical plans, usually sponsored by medical societies and frequently associated with Blue Cross (hospital service) plans, 1,760,000; (5) rural plans sponsored by the Department of Agriculture, 307,000. These total 9,462,000, and omit an estimated 200,000 or so eligible for university health services and other miscellaneous types of coverage. Suf-

fice it to estimate that at present approximately 10,000,000 persons are covered by some type of prepaid medical service.

#### COMMERCIAL INSURANCE

The estimated 5,000,000 persons insured with commercial carriers constitute half of all holders of medical insurance in the country today. Most have contracts which provide reimbursement of stipulated amounts for medical service in surgical and obstetrical cases only. Additional coverage for other physicians' services is quite new and experimental, with probably not more than 150,000 policies carrying this provision. At least 80 per cent of those insured for surgical and obstetrical care are enrolled on a group basis, mostly by large life insurance companies in conjunction with group life insurance policies.

#### INDUSTRIAL MEDICAL SERVICE PLANS

Industrial medical service plans, now estimated to cover 1,900,000 persons, are important as pioneers, as well as for the excellent service which many of them render. The Northern Pacific Mutual Beneficial Association was formed in 1882 for employees of the Northern Pacific Railroad, and in 1938 was rendering complete medical service and hospitalization to 16,500 employees, who contribute 1 per cent of their earnings (\$9 to \$18 per year). Many plans, such as the Tennessee Coal and Iron Company plan of Birmingham, Ala., the Stanocola plan at Baton Rouge, La., the Endicott Johnson plan at Binghamton, N. Y., and the railroad plans, have been operating for 20 years or more. They are rendering service, usually on a group practice basis with salaried physicians, and with satisfaction to employees and increased efficiency for management. Other plans, such as the Kaiser Permanente plans, were developed recently, even since the war. A few, like Stanocola,

cover dependents. Service is much broader than the usual commercial insurance, and many companies bear part of the cost. The rates quoted for the Northern Pacific plan indicate company subsidy, and the Endicott Johnson plan includes dependents, and the company pays the entire cost.

Many of these plans were stimulated partly by need for service at remote places or under war boom conditions in order to attract employees and keep them on the job. In these days of manpower shortages, employers have been glad to support medical service plans as an added incentive when wage increases were forbidden.

#### PRIVATE GROUP CLINICS AND CONSUMER-SPONSORED PLANS

Data on these plans are most difficult to secure because of their independence, their lack of uniformity, and their geographical scatter. One of the oldest and most complete medical service plans in the country is operated by Latin Americans in Tampa, Fla., through clubs called "centros." They are fraternal organizations with social and educational activities as well as health insurance, and are run by the membership. The first was organized in 1891 according to Avnet,<sup>3</sup> and was the first consumer-sponsored plan in the country. Most Latin Americans in Tampa belong to the "centros," which furnish rather complete care. Their operation is deserving of further study.

One of the best known consumer-sponsored plans is the Farmers Union Coöperative Hospital Association at Elk City, Okla. This was organized to provide preventive and early therapeutic care for members, and to provide hospital care at reduced rates. The emphasis is the opposite of the "catastrophic" illness coverage of commercial and community medical service plans. Its growth has been steady, and the members consider it an

indispensable community institution.

Group Health Association of Washington, D. C., is a consumer-sponsored plan which was organized by government employees and is famous as the subject of the federal government's successful suit against the American Medical Association for restraint of trade. Wartime shortages of professional personnel, failure to organize the medical staff on a true group basis, and a preponderance of subscribers in poor health through lack of group enrollment policies have prohibited new enrollments for some time. With new plans for reorganizing and strengthening the medical staff and for improving enrollment techniques and selection, the future should show improvements. The service includes physicians' care in home, office, or hospital, and hospitalization, at annual rates of \$24 for adult, \$12 per child, and maximum family charge (two adults and three children) of \$84.

Among private clinics, one thinks at once of the Ross-Loos Clinic in Los Angeles, the Milwaukee Medical Center, and Trinity Hospital in Little Rock. Ross-Loos exemplifies the outstanding success that is possible with group practice rendering comprehensive service on a prepaid basis to employed persons. Started in 1929 at the request of the employees of the Los Angeles County Department of Water and Power, the plan in 1943 had 27,000 members, all employed, who pay \$30 per year for comprehensive service including hospitalization except for maternity cases, and excepting dental care, appliances, special nursing, and treatment of "social diseases." Earlier attempts at covering entire families for much lower rates were unsuccessful and were discontinued. Dependents of subscribers do, however, receive service at reduced rates: 50 cents for an office call and \$25 for a major operation.<sup>3</sup>

These examples hardly indicate the

extreme variation which exists among plans of this type. Coverage tends to go beyond "catastrophic illness" but varies greatly as to exclusions, waiting periods, preëxisting conditions, coverage of dependents, etc. Most of the private clinics offering prepaid service practice on a group basis with staffs of practitioners and specialists using common facilities and pooling income through a partnership, salaries, or a combination. Such groups may or may not operate hospitals, but the common use of expensive equipment permits many diagnostic studies to be done at the clinic which would ordinarily require hospitalization by the solo practitioner.

Some consumer-sponsored plans, such as Group Health Mutual of Minnesota, make arrangements for care of their subscribers at private clinics in practice on a fee basis, instead of organizing their own medical services. Some privately initiated clinics, such as the Milwaukee Medical Center, render service on a fee as well as a prepaid basis.

The very diversity indicates the lack of adequate knowledge required to establish an "ideal" plan. Our thanks are due those who have experimented and striven for improved methods of rendering service. The vicissitudes and the failures which have accompanied the successes, however, together with the small coverage of less than half a million subscribers, indicates that additional stimulus is necessary if prepaid medicine is to be extended by this pattern.

#### COMMUNITY MEDICAL PLANS

This term is applied by Reed<sup>2</sup> to non-profit plans open to the general public of a state or locality and *offering free choice of physician*. Most of them were organized under the sponsorship of the medical society in the area, and in many cases the stimulus came from a hospital service plan (Blue Cross). Many are affiliated with Blue Cross plans.

The first medically sponsored plans were established in the West as a defense against commercial exploitation of physicians. Early in the century, railroads, mines, and lumber companies contracted with physicians and hospitals for services to their workers. The business operation stimulated the development of "hospital associations," first under medical but later under lay control, to handle the contracts. Many did not operate hospitals. Competitive bidding resulted, with more service offered for less money until rates of remuneration were forced to low levels. Finally, in 1929, county medical societies in Oregon and Washington organized "medical service bureaus," stock in which was owned by the physicians themselves. These bureaus contracted with employers to furnish complete care, and pro-rated income among members after hospital and other costs were paid. Over 300,000 persons are covered by these plans in Oregon and Washington.

Their costs for hospitalization and physicians' services, including home and office care, range from \$21 to \$33 per year for employed persons; dependents are not covered. Bureaus in Washington State, moreover, will not enroll clients with income over \$2,500 per year. The plans are not expanding at present because the economic threat from hospital associations has largely disappeared and war wages have made service to fee patients more remunerative than to insurance patients.

Two other state plans of interest as examples of trends are California Physicians Service and Michigan Medical Service.

California Physicians Service was organized in 1939 as the answer of the California Medical Association to the compulsory health insurance bill sponsored in the legislature by the governor. Originally planned to furnish complete physicians' services to employed persons

for \$20 per year, the venture was soon in difficulties. Physicians were to be paid on the basis of a service unit with a par value of \$2.50, but par was never reached. After three years, only 40,000 subscribers had been enrolled, and the demand for services was so much higher than anticipated that unit values had fallen to 50 per cent of par or less.

Control of the service was vested in a board of trustees composed of 10 physicians and one layman. Subscribers were dissatisfied because they had no voice in administration of the plan; physicians were unhappy at the low fees and complained of over-utilization. Some doctors imposed extra charges; others chided their patients for buying "cutrate" medicine. Finally, a large group of physicians resigned en masse.

The only remedy was reduction of benefits and raising of rates for subscribers. Service was reduced to surgical and obstetrical care while hospitalized. Persons with incomes over \$3,000 were previously excluded, but the plan was opened to them with the understanding that physicians might make extra charges. With these adjustments, the unit value reached 90 per cent of par in 1944. Further activity to increase enrollment was stimulated by the spate of compulsory health insurance bills introduced at the 1945 session of the legislature, and CPS boasted 162,000 subscribers on July 1, 1945.

Michigan Medical Service, with almost four times the enrollment of its nearest rival, underwent an experience similar to that of CPS. Organized in 1939 with the backing of a strong state Blue Cross plan, MMS undertook to provide virtually complete service to employed groups and dependents at annual rates of \$24 for single persons, \$30 for married couples and \$54 for families. These rates did not include hospitalization, and the subscriber paid for the first \$5 worth of medical costs

each year. Enrollment lagged, utilization was high, and the plan was soon in the red.

In 1942, benefits were reduced to surgery, x-ray, obstetrics and anesthesia in hospitals, and rates to \$7 for single, \$19 for couples, and \$27 for families. Income limits for guaranteed full service are \$2,000 single and \$2,500 married. Support from UAW-CIO unions at Chrysler and General Motors plants and continuing coöperation of the Blue Cross plan have pushed enrollment to a whopping 842,000 on July 1, 1945.

The plans more recently sponsored by medical societies are profiting by these experiences, and usually follow the pattern of benefits and fees finally evolved by California and Michigan Medical Services. Surgical and obstetrical care while in the hospital is the rule, with variation in other benefits such as laboratory and x-ray services.

The ceiling on subscriber income has raised knotty problems in both selling and servicing. Physicians accustomed to payment on the "sliding scale" frequently insist upon a limit to the incomes of subscribers for whom service is guaranteed. Subscribers misunderstand; some object to the income investigation; some enroll while below the income limit and object to extra charges when income increases. Many plans have given up all attempts to provide service, and simply indemnify for certain medical costs in the same way as the commercial companies.

A second problem facing these plans is their multiplicity and lack of standardization. Some plans do not provide reciprocity with other plans. Subscribers in a non-reciprocating plan can receive service only in their home area. Plans which do reciprocate differ as to details of coverage so that administration is complicated, and collections may be delayed.

Finally, these plans have no influence

on the quality of care rendered, nor do they stimulate improvement in the distribution of physicians according to medical needs. Their contribution to the payment of medical bills by employed persons and their dependents is real, but their cost puts even their limited coverage beyond the reach of those most in need of care. With all these limitations they do not give promise of bringing complete health care to all the people.

It is unfortunate that organizers of many new medical society plans today are motivated, as were the founders of the services in California, Washington, and Oregon, by desire to defend against real or fancied encroachment, rather than by a constructive desire to improve and extend medical service. An approach which concentrated on the social values inherent in even these limited programs would contribute substantially to the development of a sound service for all citizens.

#### RURAL PLANS OF THE DEPARTMENT OF AGRICULTURE

These plans, administered by the Farm Security Administration and the Labor Branch of the Production and Marketing Administration (formerly the War Food Administration), constitute the most important and extensive contributions of the government in this field. They have been developed with the full coöperation of the Public Health Service, which has assigned medical, dental, and public health engineer officers to the Department to organize and supervise the program.

Two types of plan are operated: (1) direct service for imported farm labor, and for migrants and certain other classes of domestic farm labor; (2) prepayment plans for Farm Security clients. The direct service plans were originated by the Farm Security Administration to provide care for migrant workers, but became a direct war pro-

gram of the War Food Administration when the government undertook the importation of foreign laborers from Mexico and the West Indies under treaty provisions which guaranteed health services. In addition to building and operating hospitals in Belle Glade, Fla., and at Eleven Mile Corner, Ariz., the government assigned full-time doctors and nurses for service in other areas. Services were also procured from community physicians, hospitals, nurses, and health departments. The cost of complete service is estimated at about \$24 per year, and is borne entirely by the government. No prepayment is involved.

The Farm Security Administration prepayment plans were initiated in 1936 when it became apparent that ill health, either as a cause of disability of the farmer or as a source of expense for care, was a major cause of default on loans. Clients were offered opportunity to expand their annual loan budgets by including an item for medical care. The budgeted amounts for all clients in the plan were pooled, and agreements were made with physicians, usually through their medical societies, to care for these clients for the sums advanced, prorated monthly on a fee basis according to services rendered. Payments from clients ranged from \$20 to \$50 annually, depending upon ability to pay, scope of service, etc. About two-thirds of the physicians in the counties with plans participated. At the peak of the program in June, 1942, plans were operating in 1,140 of the 2,500 rural counties, and 117,000 families with over 500,000 individuals, or 60 per cent of the FSA clients in these counties, were enrolled. This had fallen by 1944 to 60,000 families in slightly less than 1,000 counties, with about 300,000, or 41 per cent, of the clients in these counties enrolled.

Services depended upon local availability, and were largely of an emergency

nature. In a few areas, notably New Jersey, Western New York State, and California, fairly complete service, including home and office care, was rendered by arrangement with community medical service plans.

Turnover has been high; in Ohio, McNamara and Mangus<sup>4</sup> found that only 8 per cent of the clients maintained continuous membership over a 3 year period. Some of the factors responsible for the turnover and shrinkage are: the low incomes of subscribers in proportion to costs, limited services offered, particularly where the plan is confined within a rural county, and loss of doctors to war service. Some plans have closed because doctors were dissatisfied.

*Experimental plans*—The Department of Agriculture undertook experiments with plans open to the entire farm population of five selected counties—one each in Georgia, Mississippi, and Alabama, and two in Texas. Charges were 6 per cent of the net cash income of each farmer, which represents the average proportion of farm income spent for medical care.<sup>5</sup> In order to provide complete service, the plans were subsidized by the government through non-profit "local health associations" incorporated to administer the plans. Except for the rarer specialist services and more refined diagnostic procedures, service in home, office, and hospital is complete, including some dental care. In four plans, physicians are paid on a fee basis and in one by capitation.

The cost has been about \$50 per family per year, and the subsidy required has been 81 per cent for the first year and 62 for the second. In spite of this heavy subsidy and the good "buy" offered, only 50 per cent of the farm families ever enrolled in the plans. This is a striking commentary on the validity of the suggestions now being made that voluntary health insurance



be allowed to solve the problems of paying for medical care.

Illnesses treated per year ranged from 1,022 to 1,964 per 1,000 persons, which is two to four times the 526 reported in rural areas by the U. S. Department of Agriculture.<sup>6</sup> This may mean that the 50 per cent who enrolled were the less healthy, which in itself is an argument for compulsory enrollment and spreading of the cost over the entire population.

The deficiencies in these plans are pointed out in the department's recently issued report.<sup>6</sup> Their failure to improve quality of care or distribution of physicians and health facilities parallels that of the community medical plans. They provide a better method of paying for whatever service happens to be available in the community, and that is all. The department considers definitely that only a compulsory health insurance program which draws financial support from all the people and which can draw for service on a medical trade area large enough to support the best specialist services and hospital facilities will solve the problems of rural health care.

#### SUMMARY AND CONCLUSIONS

Medical service plans cover an estimated 10 million persons in the country and may be classified in five main groups: (1) commercial insurance, (2) industrial, (3) private clinic and consumer sponsored, (4) medical society, (5) rural (U. S. Department of Agriculture).

They vary as to population covered, services rendered, costs and financing, organization of services, and utilization.

The majority are concerned principally with the financial aspects, rather than quality and efficiency of care and its extension to areas and groups not now served. Group practice units furnish the best and cheapest care.

As a result of limited services, cost, geographic restrictions, and other factors, the majority of the population eligible does not enroll in available plans. Widespread distribution of modern medical service to all the people on a prepaid basis cannot be achieved without improved organization of services through group practice with cost spread by obligatory enrollment of the population and financial support through the taxing power of the federal government. This requires insurance combined with general taxation, as recommended last year by the A.P.H.A.,<sup>7</sup> and on November 19 by President Truman.

#### REFERENCES

1. National Health Program, Message 'from The President of the United States, *House Document 380*, 79th Congress, November 19, 1945.\*
2. Reed, L. S., and Vaughan, Henry F., Jr. Unpublished data from the U. S. Public Health Service survey of Blue Cross hospital service plans and community medical service plans.
3. Avnet, Helen Hershfield. *Voluntary Medical Insurance in the United States*. Medical Administration Service, 1790 Broadway, New York, N. Y.
4. McNamara, R. L., and Mangus, A. R. Prepayment Medical Care Plan for Low Income Farmers in Ohio—Ohio Experimental Station *Bull.* 653, Oct., 1944.
5. *Better Health for Rural America*. Interbureau Committee on Post-War Programs, U. S. Department of Agriculture, Oct., 1945, page 12.\*
6. The Experimental Health Program of the U. S. Department of Agriculture, *Monograph No. 1*, Subcommittee on Wartime Health and Education, Senate Committee on Education and Labor.\*
7. Medical Care in a National Health Program. An Official Statement of the American Public Health Association. *A.J.P.H.*, 34:1252 (Dec.), 1944.

\* References 1, 5, and 7 may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C.

# Milk-borne Disease in Massachusetts 1941-1945\*

ROY F. FEEMSTER, M.D., DR.P.H., F.A.P.H.A.

*Director, Division of Communicable Diseases, Massachusetts Department of  
Public Health, Boston, Mass.*

THE previous chronological reports on this subject from Massachusetts have all been compiled for peacetime years. It was decided, therefore, to compile one report in a wartime year in order to show the impact of the shortage of personnel and the generally disturbed conditions upon certain phases of the controls exerted upon the sanitation of the milk supplies. In spite of the handicaps of war conditions, the impetus of previous educational programs and the high standard of procedures in milk production, added to the new stimulus of inspections by the armed forces, brought the level of communicable diseases spread by milk to a new all-time low in the state.

## CHANGES IN CONSUMPTION AND CONTROL

As in previous surveys, questionnaires were sent to 187 of the 351 communities in the state. The remaining 164 all had populations of less than 2,500, and little information can be obtained in regard to milk supplies. Replies were received from 162 of the 187 communities.

In the previous report published in 1941,<sup>1</sup> it was noted that there had been a small but gradual decrease in milk consumption since 1928. It is encouraging to find that this downward trend has been reversed. The per

capita consumption for 1944 is computed to be 0.51 quarts per day as compared to 0.42, 0.44, 0.45, 0.50, 0.46 and 0.56 in the years 1942, 1931, 1928, 1926, 1923, and 1919 respectively. The increase probably was not as much as appears since no adjustment has been attempted for wartime changes in population. In Massachusetts, however, this has been limited largely to the military personnel present within the state.

There has been a further increase in the amount of the pasteurized milk consumed. It will be seen from Table 1 that this increase has been progressive since 1919, the date of the first chronological report. It will be noted that the 162 communities from which questionnaires were received in 1944 represent 92.5 per cent of the population of the state, and that 96.4 per cent of the milk sold in these communities is pasteurized.

TABLE 1  
*Increase in Per cent of Milk Pasteurized in  
Communities Answering Questionnaire  
Massachusetts*

Year	Communities Answering Questionnaire		Per cent of Milk Consumed Which Is Pasteurized
	Number	Per cent of Pop. of State	
1919	..	61.0	34.0
1923	41	65.0	74.0
1926	43	70.2	81.0
1928	95	85.0	85.7
1931	90	83.4	89.7
1939	143	90.0	92.4
1941	162	92.5	96.4

\* Eighth Chronological Report from the Massachusetts Department of Public Health.

TABLE 2

*Per cent of Milk Pasteurized in Communities Answering Questionnaire  
by Size of Community*

*Massachusetts*

<i>Population Group</i>	<i>1923</i>	<i>1926</i>	<i>1928</i>	<i>1931</i>	<i>1939</i>	<i>1944</i>
50,000 and over	82.3	91.6	93.0	96.1	99.5	99.7
25,000-50,000	65.1	63.9	84.5	89.5	95.0	99.0
15,000-25,000	43.4	35.6	61.2	80.0	85.0	97.1
10,000-15,000	10.8	34.1	62.1	59.8	75.4	84.8
5,000-10,000	.... *	....	51.9	55.3	65.0	81.3
2,500-5,000	.... †	....	....	....	58.5	79.4

\* Questionnaires were not sent until 1928.

† Questionnaires were not sent until 1939.

The larger communities have consistently reported higher percentages of milk pasteurized (Table 2). Even in the smallest communities, almost 80 per cent of the milk is protected by pasteurization.

In the sixth chronological report<sup>2</sup> an estimate was made of the milk pasteurized in all of the communities of the state for 1931, based upon the reports of the ninety which had answered questionnaires. Such an estimate was made also for 1939 in the seventh chronological report. Using a similar method of calculation, an estimate was made for 1944. This estimate shows that almost 95 per cent of the milk sold in the state is now pasteurized, compared to 85 and 90 per cent in the two previous reports.

One reason for the high per cent of milk pasteurized is that between 1928 and 1941 there was a continuous move

on the part of the larger communities in Massachusetts to pass regulations requiring the pasteurization or certification of all milk sold. During the war years the shortage of pasteurization equipment made it impossible to proceed further along this line. However, by the end of 1945, 85 communities representing 79.2 per cent of the population of the state had put regulations of this kind into operation. Only one community of over 25,000 population does not now have such a regulation, and 31 of the 46 with populations between 10,000 and 25,000 have taken such action. As soon as pasteurization equipment is again available, the efforts to have such regulations passed will be resumed.

In order to appease those who object to pasteurized milk, regulations in Massachusetts have usually recognized certified milk as the only raw milk

TABLE 3

*Per cent of Communities Answering Questionnaire Which Make Bacteriological Examinations*

*Massachusetts*

<i>Population Group</i>	<i>1928</i>	<i>1931</i>	<i>1939</i>	<i>1944</i>
50,000 and over	94.1	100.0	100.0	87.5
25,000-50,000	63.6	61.5	81.2	81.3
15,000-25,000	63.7	76.4	71.0	70.8
10,000-15,000	60.0	52.9	70.0	61.9
5,000-10,000	30.0	46.2	48.6	39.0
Total	57.9	65.7	68.3	61.9
2,500-5,000	.... *	....	42.4	34.1
Total			62.5	54.7

\* No questionnaire sent until 1939

TABLE 4

*Bacteriological Examinations of Milk by Communities Answering Questionnaire  
1939 vs. 1944*

Population Group	Quarts of Milk Sold per Day		Total Bacteriological Examinations		Examinations per 100,000 Quarts of Milk Sold	
	1939	1944	1939	1944	1939	1944
50,000 and over	919,146 *	1,162,651 *	43,575	37,389	13.0	8.9
25,000-50,000	285,261	312,865	15,792	6,839	15.2	6.0
15,000-25,000	181,764	215,425	5,048	3,483	7.6	4.5
10,000-15,000	111,141	123,583	1,406	913	3.5	2.0
5,000-10,000	93,791	150,076	3,858	2,630	11.3	4.8
2,500- 5,000	46,609	77,228	3,317	2,466	19.5	8.8
	1,637,712	2,041,828	72,996	53,720	12.2	7.2

\* Multiply by 365 to give quarts sold per year

which could be sold. Such milk is a very small problem in Massachusetts since all certified milk represents only about 0.65 per cent of the total milk sold, and more than three-quarters of this is pasteurized by popular demand.

The impact of disturbed work conditions showed its greatest influence upon the inspections and laboratory examinations of milk. Table 3 shows that there has been a decrease in the number of communities which make bacteriological examinations. This is also reflected in the number of examinations carried out per hundred quarts of milk as shown in Table 4. The fluctuations have varied with the size of the community, but there has been a general decrease from 12.2 examinations per 100,000

quarts in 1939 to 7.2 examinations in 1944.

It may be that this does not represent the true picture because rapid changes in personnel have made record keeping difficult, and some communities may not have reported the true number of examinations which have actually been carried out.

There has been a similar decrease in the total number of inspections by local health department personnel as shown in Table 5. The largest decrease has been in the communities with the largest and smallest populations. There was a greater decrease in the number of inspections of dairy farms than in the inspection of milk plants and pasteurization plants. These decreases

TABLE 5

*Inspections of Milk Farms, Milk Plants, and Pasteurization Plants by Communities Answering Questionnaire*

1939 vs. 1944

Population Group	Total Inspections		Inspections per 100,000 Quarts of Milk Sold	
	1939	1944	1939	1944
50,000 and over	23,336	10,469	6.9	2.4
25,000-50,000	4,722	6,045	4.5	5.3
15,000-25,000	6,679	2,945	10.1	3.8
10,000-15,000	2,425	1,877	5.9	4.2
5,000-10,000	3,908	2,342	11.4	4.3
2,500- 5,000	3,334	956	19.5	3.5
	44,404	24,664	7.5	3.3

have been somewhat compensated for by some increase in inspections by our department together with the additional inspections which were made during wartime by the armed forces.

The decrease in both bacteriological examinations and inspections is due in part to the decrease in the number of milk farms, milk dealers, milk plants, and pasteurization plants during the war period. Many small operators found that more could be made in war work than in the milk business. The number of inspections and examinations will have to be increased once more when some of the small operators again set themselves up in the milk business.

The reports for 1944 indicate that there has been some decrease in number of goats and the number of quarts of goats' milk sold. In 1938, 1,082 goats were reported by 143 communities as compared with 850 reported by 162 communities in 1944. The amount of milk sold had dropped from 639 quarts to 621 quarts per day.

Milk inspection work was carried out by full-time employees in 39 of the 162 communities which answered the questionnaires. In some instances the employees performed other duties for the

board of health. Eighty-six of the communities have a part-time milk inspector and only 37 have no milk inspector; 35 of the latter were in communities of under 10,000 population, and 26 in those under 5,000 population.

#### OUTBREAKS TRACED TO MILK

The fact that only three milk-borne outbreaks have been reported in Massachusetts during the last five years is good evidence that the milk supplies of the state are being well protected. With the disappearance of large outbreaks of milk-borne diseases, the most potent reason for using pasteurized milk at the present day has been the continued occurrence of sporadic cases of undulant fever among the comparatively few users of raw milk in the state. In earlier years septic sore throat, typhoid fever, and scarlet fever spread by milk exerted the greatest pressure to swing from raw to pasteurized milk. In Table 6 it will be noted that the number of outbreaks, the total number of cases, as well as the number of cases per outbreak have continued to decline.

The milk-borne outbreaks which have been reported since the last chronological report are listed in Table 7. For

TABLE 6  
Total Reported Outbreaks and Total Cases of Milk-borne Disease\*  
Massachusetts

Period	Outbreaks		Cases		Cases per Outbreak
	For Period	Per Year	For Period	Per Year	
1886-1890	3	0.6	104	20.8	35
1891-1895	4	0.8	224	44.8	56
1896-1900	15	3.0	308	61.6	21
1901-1905	20	4.0	410	82.0	21
1906-1910	28	5.6	2,878 †	575.6	103
1911-1915	45	9.0	4,255	851.0	95
1916-1920	32	6.4	1,287	257.4	40
1921-1925	17	3.4	444	88.8	26
1926-1930	14	2.8	1,659	331.8	119
1931-1935	7	1.4	220	44.0	31
1936-1940	4	0.8	331 ‡	66.2	83
1941-1945	3	0.6	75	15.0	25

\* Includes typhoid fever, diphtheria, gastroenteritis, scarlet fever, septic sore throat, and undulant fever.

† First period in which septic sore throat was included. The large figures in this period, however, are due mainly to milk-borne scarlet and typhoid.

‡ First period in which gastroenteritis and undulant fever were included.

TABLE 7  
List of Outbreaks Traced to Milk  
Massachusetts  
1941-1945

Year	Month	Place	Disease	Cases	Deaths	Source	Milk Past or Raw
1941	Mar. Sept.	Leominster	Undulant Fever	16	0	Infected Herd	Raw
1942	None						
1943	Sept.	Rowley	Scarlet Fever Septic Sore Throat (Hem. Strep.)	46	0	Case *	Raw
1944	Sept.	Fall River	Sonne Dysentery	13	0	Case †	Past.
1945	None						

\* Milker had sore throat and rash.

† The milk producer and distributor (who supplied milk to the school where the outbreak occurred) and his daughter had gastroenteritis and positive cultures for Sonne dysentery. The milk was delivered in large cans with paper caps.

the first time since the beginning of these reports, no deaths have occurred among those affected in milk-borne outbreaks.

#### DISCUSSION

It is encouraging to discover that the consumption of milk has once more increased in Massachusetts. A part of this is undoubtedly due to the great emphasis upon nutrition during the war period. Without doubt, it has also been partly due to the shortage of other protein foods.

Milk continues to be one of the safest foods consumed in Massachusetts. Even in the disturbed wartime period, milk-borne disease has remained at a low level, when other food supplies have come under great suspicion.

The return of peacetime conditions should make it possible to resume the passing of regulations requiring pasteurization and certification of milk. Already almost 80 per cent of the people of the state live in communities

where certified milk is the only variety of raw milk which can be purchased.

#### SUMMARY

1. Milk-borne disease continues to decrease in Massachusetts. Only three outbreaks have been traced to milk during the last five years.
2. There has been a further increase in the per capita consumption of milk since 1939.
3. It is estimated that almost 95 per cent of the milk consumed in this state is pasteurized.
4. There was some decrease in the number of bacteriological examinations and the number of inspections by local personnel during the war years. This was in part compensated for by inspections made by other agencies.

#### REFERENCES

1. Feemster, Roy F. Milk-borne Disease in Massachusetts, 1933-1940. *A.J.P.H.*, 31, 11:1169-1173 (Nov.), 1941.
2. Bigelow, George H., and Feemster, Roy F. Milk-borne Disease in Massachusetts, 1930-1932. *A.J.P.H.*, 23, 6:571-576 (June), 1933.

NOTE: The author is indebted to the district sanitary officers for valuable assistance in obtaining the coöperation of milk inspectors and local boards of health in filling out the questionnaires from which this report was compiled.

## Three Health Education Projects— A Critical Analysis\*

INCLUDED in the two day Victory Meeting of the New York City Public Health Association, was a session devoted to a critical analysis of three health education projects. In opening the meeting Chairman Paul H. Sheats, Ph.D., Educational Director of Town Hall said, "I assume that the common ground of interest which brings us together, despite the specialized nature of the jobs we are doing, is a recognition of the fact that the success of our respective programs depends upon the skill with which we develop programs of community education. The approach we are making here is a very practical one. Instead of a discussion of theories the Program Committee has wisely planned reports of three widely different, widely varying educational programs. On the basis of those reports we shall discuss some of the tentative generalizations and conclusions that can be drawn with reference to good principles and procedures in the field of health education.

"One of the most difficult areas for work in the field of adult education is the large metropolitan community. Many sociologists have long been interested in efforts to organize neighborhood groups and develop, once again, the sense of belonging and of participation in community affairs that characterized the early American community.

"Our first speaker is to give a report

on such a program. Dr. Jerome Peterson, District Health Officer of the Red Hook-Gowanus Health Center of the New York City Health Department will present an interesting illustration of how some of the difficulties in a metropolitan area can be overcome."

*Dr. Peterson:* "My story is of an attempt to organize the residents of the Red Hook-Gowanus Health District for participation in a health program. The idea started about a year ago, when some of the people in the District came to the Health Center and asked us to contribute a weekly or monthly article to a newspaper published by their housing project. As we talked to them they became interested in health and health programs. At the same time, the manager of the housing project was interested in having something done along health lines for the 10,000 residents of the project.

"One by one we began to collect more persons who were interested: social workers, recreation people, and members of lay organizations, such as the Service Council and Civic League. They were interested in health, but they were also interested in recreational problems, child care centers, more libraries, better transportation, and better housing outside of the project. Therefore, instead of trying to organize only for health, we decided it might be more effective to organize for all these things in which they were interested. We of the Health Department and the Health Education Service would participate not only in health, but in all the projects.

\* Summary of a Panel Session arranged by the National Publicity Council for Health and Welfare Services, Inc., and presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 13, 1945.

"Out of this grew a Neighborhood Council. It was constituted about equally of professional and lay people. The interest was fairly keen among a small group, but we realized that if we really wanted to get down to the grass roots we would have to get the interest of hundreds and thousands of residents (about 20,000 people live in the District). So we asked what they would like to start, in the hope that a project would crystallize the feeling. They were interested in a health subject, probably because we were the instigators or prime movers, and because a program of health was the easiest to start.

"An x-ray survey was decided on as the first program. It was our job to interest the people in getting their chests x-rayed. The way we did that formed the organization pattern of the Council. The Chest X-ray Committee as set up was constituted entirely of laymen; the chairman and co-chairman were housewives. There was professional guidance, but they did the work.

"They started by getting neighborhood representatives. These representatives were to go to the various apartments in the housing project and house by house outside the project, telling people about the Neighborhood Council and the x-ray survey. In signing up people for chest x-rays the emphasis was on the fact that this was a project of the Neighborhood Council.

"There were a number of superstitions or reluctances to overcome. Some feared they might be moved out of the project if they were found to have tuberculosis. Others feared a scheme to get their homes away from them, because it had been rumored that the City wanted to expropriate the land in connection with the development of a tunnel for the Belt Parkway. In the main those objections were overcome.

"About a hundred people served as neighborhood representatives. popular-

izing the idea of the x-ray survey. They were fairly successful. They showed movies, had pep rallies and radio broadcasts, and put up posters. Those techniques are not what I am interested in now. What I am interested in is that the people themselves planned and carried out the program. They proved that a community council could function.

"After the survey the problems of recreation were taken up but that is not part of my story, except to say that we in the Health Department continued to help in this and will continue to help in whatever field of interest they choose.

"Another part of the District had a large diphtheria problem. Some community action was obviously needed. Again we went to community leaders—a lawyer, some ministers, a candidate for judge, schoolteachers—and asked them to come and talk it over with us. Out of the talk developed a lay committee of twenty-five housewives, who undertook the job of going around among their friends and clubs urging the immunization of preschool children. Thus was laid the foundation for what we hope will become a Neighborhood Council in that district.

"In the meantime, two or three other groups have caught the same idea and want to organize a Neighborhood Council and develop similar programs. All this does not happen by itself. One needs some personnel and a lot of work. Very little money is involved.

"We were fortunate in having the interest of the U. S. Public Health Service in this sort of community cooperation. They were foresighted enough to supply us on a year-and-a-half basis with the services of a health educator, a well trained young woman who did practically all the leg work for us. At the same time, the City Health Department has cooperated throughout the program.

"Also, we had the cooperation of the various agencies in the community.



The Council of Social Planning in Brooklyn assigned a worker to cooperate with us. This trained help has been of invaluable assistance. We were fortunate, too, in having a number of students from schools of public health and social work who were assigned to us for field work.

"Our experience has shown us that seemingly uninterested communities can become interested in their own welfare to the point of effecting an organization which enables them to work out some of their own problems. The District Health Center has found a new ally in the Neighborhood Council and this working together should lead to improved public health."

*Dr. Sheats:* "We have always found in programs of adult education, that self-interest is one of the most important motivating drives in getting public interest and participation. In that self-interest factor, the vocational interest of the individuals is extremely important.

"The next report indicates what is being done in New York City in a health education training program for food handlers. I am very glad to present as our second speaker Mr. Edwin Ludewig, Acting Director, Bureau of Food and Drugs, Department of Health, New York City."

*Mr. Ludewig:* "The Bureau of Food and Drugs of the Department of Health of New York has the responsibility for the sanitary supervision of approximately 100,000 retail and 5,000 wholesale food establishments, as well as the necessary control work in pasteurizing plants, milk receiving depots and dairies throughout the milk shed supplying the city. This responsibility is undertaken by seven veterinarians and 170 inspectors, of whom 30 are assigned to the country.

"The food handler must understand not only his job but his responsibilities to public health as well. If we can

obtain the intelligent cooperation of the food purveyor in the conduct of his establishment, and enable him to understand our viewpoint, it is of great aid in the enforcement of sanitary regulations. This can be accomplished by a food handlers' training program designed to inform him about the Health Department regulations and his responsibility in maintaining a clean establishment and preventing the transmission of disease. The Bureau of Food and Drugs has undertaken this training in three ways:

- "1. The formation of committees of operators of restaurants, hotels, groceries, and food processors
- "2. A lecture program for large groups of food handlers
- "3. Evening courses in food sanitation of from 32 to 60 hours

"In 1943, when difficulty in maintaining sanitary conditions in restaurants due to the shortage of experienced personnel became acute, a conference of operators of chain restaurants called by the department resulted in the formation of a 'Public Health Committee of the Soda and Luncheonette Industry.' Representatives of each of twenty chain restaurant organizations met once a month in the Department of Health building to discuss ways of maintaining good sanitary conditions in their establishments.

"Lectures on rodent control have been given to which maintenance superintendents of these organizations were invited; a brief mimeographed outline of the rodent control program was distributed. Other lectures on dishwashing, refrigeration, housekeeping, sanitary construction of equipment, the necessity for self inspection, etc., have been provided. The members receive reports of inspections of their establishments, thus expediting the correction of unsanitary conditions. This committee has been functioning for over two years and the interest of its members has been

unflagging. Similar committees have been set up in other branches of the restaurant and grocery industry and in the Coney Island and Rockaway summer resort areas.

"Because the members evinced great interest in training courses for food handlers, the department set up a lecture demonstration of 1½ hours for the benefit of the supervisory as well as the rank and file personnel. This lecture on 'Restaurant Sanitation' is accompanied by 110 slides and is followed by the educational motion pictures, 'Twixt the Cup and the Lip' and 'Slingin' Hash.' At the start, the food handler is made aware of his responsibility to public health and shown that disease is transmitted through definite channels from an infected to a healthy person by bacteria. The channels of transmission: hands, nose, mouth, rodents, flies, roaches, equipment, and eating utensils are thoroughly explained. The lecture is concluded by reviewing the salient precautions to be observed in good food handling procedure.

"Five or six lectures a month are held in the Department of Health auditorium accommodating 165. They are held also at hospitals, institutions or hotels where groups of food handlers can be assembled. At the conclusion of the lecture each person receives the booklet *From Hand to Mouth*, published by the U. S. Public Health Service and reprinted by the New York City Department of Health. During the year 1945, a similar lecture program was conducted at wholesale food manufacturing establishments.

"The members of the chain restaurant industry committee are responsible for sending a definite number of employees to the lectures. In addition, all new applicants for permits to conduct restaurants, bakeries, or frozen dessert establishments are required to attend. Approximately 500 such applicants apply for permits each month, and a notice

to attend is delivered by the inspector during his routine inspection of the establishment a few days after the application is signed. As might be expected, the reactions to those lectures are varied, but we are informed by the supervisory personnel that employees often demonstrate the principles they have learned to their coworkers who, in turn, are stimulated to attend future lectures.

"Since the start of the organized lecture program in January, 1944, over 13,000 food handlers of retail establishments and approximately 2,500 employees of wholesale establishments have attended. At present about 1,000 food handlers a month are attending and the program is being constantly expanded.

"In 1942 a provision was added to the *Sanitary Code* requiring that 'the operator of every wholesale food processing establishment shall engage the services of or have in his employ a qualified person who shall be able to make sanitary food inspections. Such qualified person shall make inspections of the establishment at not less than monthly intervals. His findings on these inspections shall be recorded upon a form approved by the Department of Health and shall be kept on file at the premises for a period of twelve months. Such inspection reports shall be open to inspection by representatives of the Department of Health at all times.'

"Enforcement of this wholly desirable objective has been impossible because of the lack of adequate training facilities for restaurant food handlers, though as far back as 1936 there have been satisfactory training courses for operators and personnel in the milk and frozen dessert field. After several years of effort by the Department of Health, the Board of Education approved the inauguration of free evening courses in food sanitation to be held at the Food Trades Vocational High School

starting October 1, 1945. The courses consist of two 2 hour sessions each week for a total of eight weeks and are open to any person employed in the food industry. There are no educational prerequisites.

"This food handlers training program of the Department of Health, embracing both lectures and films, will eventually reach a large percentage of the food handlers in New York City. While marked improvement has already been observed, it is difficult to measure the overall effect at this time. Not revolutionary results but evolutionary progress is expected. We feel confident that a broad foundation is being laid in developing a more intelligent understanding and approach on the part of the food dealer and his employees, which should result within the next few years in material aid to the department's inspection force through improved sanitary conditions and better public health protection in the manufacture and handling of food."

*Dr. Sheats:* "We have now had two reports from New York City, on widely different programs. I think you would be the first to agree that health education problems are greatly different in small, rural communities from those in metropolitan areas such as New York. We are asking our next speaker to talk to you particularly because of his connection with a rural program. He will report on cancer. I am glad to present Dr. Benjamin Feurstein, Director of the Tumor Clinic at Southside Hospital, Bayshore, Long Island."

*Dr. Feurstein:* "In 1934, the Suffolk County Cancer Committee established one of the first rural cancer clinics. Here are the steps necessary to establish such a clinic. Let me say first that education in itself is not an end; it is a means to an end. You are going to educate the community in order to try to reduce the death rate from cancer, but the education will be of no avail unless

you provide facilities for treatment. Therefore, when we speak of cancer education in a rural or any other community, we include in that educational program a place where people can be treated.

"In the rural community, we call a clinic any institution which is composed of a group of doctors. In other words, this is a place where anyone, regardless of financial situation, can be examined and treated. In the diagnosis and treatment of cancer, one doctor alone cannot possibly do the job.

"The first step is to organize the Cancer Committee; second, to plan the education campaign; third, to have the doctors organize clinics for diagnosis and therapy; finally, to encourage close coöperation between the lay and medical committees.

"It is usually a simple matter to interest a few civic minded men and women in the formation of a cancer committee. All citizens are awake to the fact that cancer is our major health problem, and they are usually glad to join in the fight against it. We had no difficulty forming a lay committee in Suffolk and doubt that others will encounter any opposition. The committee must then plan its education campaign. Every means is used to bring before the public the war against cancer.

"Arrangements are made with local physicians to speak before civic groups such as Rotary clubs, parent-teacher groups, Masons, church groups, and the public schools. Occasionally we found some groups reluctant to have a speaker because 'a talk on cancer will frighten the members.' A club with a membership of 100 would have only 5 per cent present. But if the speaker presents his subject in an interesting manner, the word will spread and future talks will be better attended. We were told at the end of a meeting, 'We expected to come here and be scared,' and then

we were asked to speak to another group.

"We felt the program of educating children in public school was vitally important, but found that some school principals had to be convinced that children should be taught the facts about cancer, while some principals, strangely enough, refused. We finally got two or three to let us speak. They gave us recommendations to other principals, and in this way we worked our program into the public schools. In general, however, organizations will coöperate and the campaign will reach the ears of most of the citizens.

"The doctors must then be persuaded to organize a cancer clinic. They may prove to be the first big obstacles. We doctors are conservative and often quite stubborn. The most frequent objection raised will be that a clinic is not necessary in a rural community, since there are not enough cases of cancer to warrant one. The answer to this one is easy. Remind the doctor that cancer is the second commonest cause of death; there must, therefore, be sufficient cases to warrant a clinic in any community. But, no matter how few he thinks there might be, a disease which causes more deaths than any other except one must be fought with every possible weapon.

"A clinic to function properly must be fully staffed. Most communities can provide adequate medical personnel with the exception of a radiation therapist. X-ray and radium therapy are comparatively new fields in medicine and few doctors in rural communities practise this specialty. Yet they are essential in both the diagnosis and treatment of cancer.

"If there is no doctor in the community qualified to do radiation therapy, the medical staff should obtain the services of such a physician. The federal health agencies, for example, are granting fellowships in this field in

larger hospitals throughout the country. Through proper channels the community can obtain the services of such a man. Some are anxious to do pioneer work in rural communities.

"Once a radiation therapist is secured, the establishment of a therapy clinic will involve the expenditure of only a moderate amount of money. Most therapy clinics, when efficiently operated, are self-supporting. It may be necessary for the local committee to subsidize the project by a grant of money to the hospital. Such financial aid is usually necessary for only a short time. Our experience in Suffolk County convinced us that almost any rural community can maintain a cancer clinic for diagnosis and therapy.

"Our county is 100 miles long and 15 wide, with a population of over 175,000 people. No village has a population of over 10,000, and the largest hospital has 100 beds. We started in 1934 with one diagnostic clinic, and then timidly organized a therapy clinic. Today we have three recognized diagnostic clinics, a fourth in the making, and two therapy clinics. Our greatest problem is getting sufficient secretaries to keep our voluminous records up to date.

"What Suffolk did was no miracle. We were fortunate in having in our community a woman of determination and vision who has blazed the path for other rural clinics. The job should now be easier for other communities.

"Carry this message to the rural areas; cancer is the second commonest cause of death; you cannot afford not to have a cancer clinic."

*Dr. Sheats:* "The primary purpose here is to try to draw from these three reports some of the educational principles involved and some judgment as to the most effective procedures used. We are calling on two experts in the field of social psychology and education to help us in making that kind of in-

terpretation. I would like to call on Mr. Lawrence K. Frank, Director of the Carolyn Zachary Institute of Human Development, here in New York."

*Mr. Frank:* May I suggest the following possible subject for discussion: Dr. Peterson, of the Red Hook-Gowanus Center, brings out very clearly the difference between dissemination and communication. Dissemination is one thing—to hand out pamphlets or broadcast radio programs which may or may not make contact. We have neglected the recipient whose receptivity is established by beliefs, feelings, and cultural tradition, which may largely, if not completely block communication. It can be likened to a group of people who are not tuned in on your station. They will not listen, or will not hear what you have to say.

"The significance of Dr. Peterson's program is that he starts, not primarily with health, scientific knowledge, and medical teaching, but with people. He recognizes the disappearance of the older assumptions, values, and goals, which at one time made the American people more or less homogeneous, and realizes that people are filled with perplexities, that they are often living lives of quiet desperation. People are confronted with so many conflicting demands of jobs, families, housing, transportation, and all the other difficulties of life that their lives are filled with frustration, both internal and external.

"When we start with people, rather than with subject matter, or materials or media, we begin to be occupied with a problem not of teaching, but a problem of learning. The problem of learning is one that involves a great many aspects of the personality; the way an individual feels about life and about himself; of giving him reassurance instead of relying upon threats of what is going to happen.

"Second, it seems to me we are seeing something of major significance in

the food handlers program, namely, the realization that we must make each occupational group in our highly diversified society aware of what their normal activities mean for the welfare of the whole. That means the problem of giving the activities of each individual, no matter how insignificant they may seem or how lowly in the scale of occupations, the significance and meaning of what he is doing in the maintenance of social order and health; that is, giving him a source of personal achievement and satisfaction in participating and helping to maintain society.

"May I suggest that what we call 'morale' is just that capacity which each individual brings to each situation, each relationship, each activity contributing to social living, and investing it with a meaning and significance which takes it from the professional objective to the human objective.

"That is what I take it this program is doing. It is significant because that is what must be done—in such a way that each individual becomes aware of what he contributes, or fails to contribute to human conservation and health.

"That is the kind of morale that every mother has to have in order to maintain good food on the table and to make her chores meaningful. It is a factor in medicine. It makes every patient, no matter what his condition, a subject of concern to the doctor.

"How can we maintain that morale, in order to have all people become active participants in health care? Is that not the problem we have to face?"

*Dr. Sheats:* "Our second commentator is Mr. Charles E. Hendry, Coördinator of Research, The Commission on Community Inter-Relation, in New York."

*Mr. Hendry:* "We have had three very impressive reports of health education in action on the community front. I rather feel, with Mr. Frank,

that there is a thread running through all three of these experiences. I would use the word 'involvement' as designating the essential element that we are trying to examine here—how to involve people in making responsible decisions to improve health education and health services.

"There are three basic points that I would like to suggest, and I think they apply to all three reports:

"First, we must start with a reality basis, reality involvement, as a prerequisite to effective social action.

"Second, facts presented by an expert, whether he be a health educator or what-not, do not carry with them an obligation to act.

"The third point is that involvement, at all major functional levels is essential because there is interdependence between functionaries. The two great functionaries concerned here are the health service on the one hand, and the people themselves on the other. It is necessary to have that involvement at different functional levels, because ultimately, unless they are all involved, you do not have the reinforcement that is necessary to put a program across.

"I will discuss each one briefly. First, the reality basis: in the first project reported, I was much interested in how it got started. There was an element of spontaneity that made it real. It concerned a specific, concrete, relatively simple expression of need and interest on the part of citizens who had become aware of some need.

"In the second place, the nature of the relationship established there, between the health educator, the community organizer, and the citizens in that housing project, was more important than the nature of the activity in which they were engaged. That relationship, you will recall, was direct, personal, almost casual and informal. It went along at an easy tempo—the tempo of the people, not the accelerated

tempo of the expert, who had the answers all ready with him and, probably, in his impatience, wanted to go much faster. That illustrates the point about the reality basis.

"Now, on the next point, facts for action, rather than facts for presentation. You notice that in the housing project the use of citizens made it possible to break down the fear of facts, the fear of even gathering the facts, and the antagonism to the process of gathering the facts. That was solved by the citizens themselves gathering the facts.

"In dealing with the second report on food technology, there was an interesting point. I wonder if we got it. That is, that the food inspections were made by the food handlers themselves, in the establishments, and were placed on file for twelve months, and that those reports, made by the management, were used by the examiners, or sanitary 'policemen.' There was a case of involving those that you wanted to influence, by getting the facts themselves, which would help to orient them. That is a very neat point.

"Great emphasis was placed on the lecture method, and while the movies, movie strips, slides, 'sling-the-hash' booklets, and all the rest, were employed to give it a little vitality and 'oomph,' I wonder if it was the most effective method. There have been several experiments recently, one in this very field of food habits, which I believe are pertinent here. When the war broke out Margaret Mead was placed in charge of a food habits project in Washington. Out in Iowa, they took four groups of women to conduct an experiment in how to change food habits. First, they had a lecture by an expert in home economics; second, they had group discussion; third, they had group discussion but brought in the expert; fourth, they had group discussion leading to group decision. When the results were measured, it was found that 8 per

cent changed their habits on the lecture, 11 per cent on the discussion, 13 per cent on the discussion with the expert, and 38 per cent on the group discussion plus group decision. That is something to think about.

“ Finally, the remaining point is the involvement of functionaries at different

levels, from the consumer right up the professional scale, getting the prestige groups, the authoritative expert groups, and the consumer group all involved in the process, so that instead of looking askance at one another they feel a mutual responsibility, actually, and build together.”

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Basic Principles of Healthful Housing. American Public Health Association. 2nd ed., 1939 . . . . .	\$ .25
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C.-E. A. WINSLOW, DR.P.H.

## THE ENGLISH SCHOOL HEALTH PROGRAM

IN general, the special Review Articles published in this *Journal* are critical summaries of progress in some specialized fields of public health, with citations of the most important literature in the field. In the present issue, we are inaugurating a new type of Review Article (which we hope to repeat as occasion offers)—an analysis of current practice in some particular type of public health service in a foreign country. We believe that information of this kind may be of the greatest value, since only by pooling the experience of expert knowledge and experience in every land can the best solutions of our common problems be found.

The first Review Article of this type by Dr. J. E. A. Underwood, Senior Medical Officer of the British Ministry of Education, on "School Health Service in England and Wales" is particularly timely. In an earlier editorial<sup>1</sup> we have pointed out the grave shortcomings of American practice in this field; and we still believe that medical service for the child of school age is the weakest link in the chain of public health practice in the United States.

The first thing which is impressive in the English program is the full and unqualified acceptance of responsibility for the actual amelioration of the defects found in the school health examination. The Education Act of 1918 imposed upon the school authorities the treatment of certain specified conditions; but the Education Act of 1944 goes much further in placing a duty on local education authorities "to provide or otherwise secure all forms of medical treatment for children in schools maintained by them, with the exception of treatment in the pupil's home and certain forms provided by other public medical services, e.g., infectious diseases, tuberculosis. Such treatment must be given without cost to the parents."

The second striking point in the English scheme is the complete and effective coördination between health and educational authorities. In 1919, the powers and duties of the Board of Education with respect to medical inspection and treatment of school children were transferred to the Ministry of Health. It was.



however, provided that the Minister of Health could delegate these powers and duties to the Board of Education. This has been effected by designating the Chief Medical Officer of the Ministry of Health as also Chief Medical Officer of the Ministry of Education. On the local level, in all 63 counties and 80 out of 83 county boroughs, the Medical Officer of Health also serves as School Medical Officer. By this coöperative arrangement, the chaotic gaps and conflicts between boards of health and of education so common in this country are eliminated. The total amount of time devoted by medical officers and assistant medical officers to the school program is equivalent to one full-time physician for each 6,900 pupils. In addition, some 800 specialists (ophthalmologists, dentists and orthopedists) are employed on part-time.

English practice—like that in intelligent American communities which are not handicapped by senseless laws requiring annual examination—involves three complete routine health examinations during school life, with such examinations on referral as may be indicated. Routine inspections totalled over a million, and special examinations and re-inspections nearly three millions, for five million children. The dental program provides, in theory, for an annual examination and treatment as required. This ideal has not as yet been attained. In 1945, about 59 per cent of all children actually examined needed dental care and 66 per cent of those requiring care received it.

In addition to the doctors, dentists, and nurses employed in routine school work, there are extensive in-patient and out-patient orthopedic services (as in our Crippled Children's Program); special clinics for speech defects, rheumatic conditions, nutritional conditions, etc.; and, above all, child guidance clinics have been developed during the war for dealing with emotional problems of childhood. Finally, Dr. Underwood's discussion of correlated health and educational provisions for the care of handicapped children contains many suggestions which should be of value to specialists in this field.

It is in no way suggested that American communities should take English practice as a detailed blue-print for our own activities. Some of the policies may be unsound—though the writer of this editorial does not detect any fundamental unsoundness. Others may be entirely wise but inapplicable at present to the riotous individualism of local self-government in the United States. We do believe, however, that the English program suggests goals we should strive by locally appropriate procedures to attain.

Above all, we would emphasize the inspiring spirit of practical coöperative effort manifest in this—as in so many other phases of British statesmanship. The vital social and political issue of the present day is the proper balance between individual initiative and coöperative social effort. The world of the future swings between the two poles of extreme Soviet Socialization and extreme American Anarchy. Such violent manifestations of individual and group selfishness as have paralyzed the social and industrial life of the United States during recent months cannot possibly continue. Benjamin Franklin is quoted as saying in a critical hour, "If we don't hang together, we shall all hang separately." The individualism which we prize—and which is for us the ultimate object of society—can only survive if liberty is controlled by a sense of social responsibility.

#### REFERENCE

1. The Test of King Solomon, Editorial, *A.J.P.H.*, 35:1222 (Nov.), 1945.

## THE MERIT SYSTEM OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

THE 1939 Amendment to the Social Security Act gave to the United States Children's Bureau power to require of the states to which the Bureau makes grants-in-aid the "establishment and maintenance of personnel standards on a merit basis." With a similar requirement written into the regulations of the U. S. Public Health Service, this law has provided the most powerful stimulant to the development of expert competence in the public health services of the nation. It extended the principles of civil service to large areas where they had before had no application; and it did so, not by detailed legal enactment, but by regulations—a procedure contributing to a maximum of efficiency and flexibility.

In order to make such a program operative, it was recognized that examination material of the highest caliber was essential, and the Children's Bureau and the U. S. Public Health Service turned to our organization of professional public health workers for the development of appropriate techniques. For this purpose, the Merit System Unit of the American Public Health Association was established; and the first examination (for public health nurses) was prepared for the State of Arizona in July, 1942.<sup>1</sup> For various reasons it was decided to develop objective material, and the multiple-choice type of question with a premise which states the problem and five choices, one and only one of which is correct, has been used almost exclusively. A typical question is:

Which one of the following conditions is usually the result of insufficient iodine in the diet?

1. Exophthalmos
2. Increased basal metabolism
3. Thyroiditis
4. Toxic goiter
5. Simple goiter

The scoring of an examination consisting of items of this form is a clerical mechanical process and eliminates the subjective evaluations which characterize the scoring of essay questions. The multiple-choice form has proved highly satisfactory in our five years of experience.

In such a system, the first task is the preparation of a suitable reservoir of questions. These questions are originally prepared by professionals actively employed in public health work and in positions at levels comparable to those for which examinations are likely to be compiled. Dr. Atwater, who serves as Director of the Unit, calls these primary puzzle-posers, "constructors." Two hundred and twenty-four individuals have so far participated in this capacity. After preliminary instruction by staff members in the technique of question-writing, they are remunerated for each question accepted, items requiring the exercise of judgment earning a higher reward than those of purely factual significance. The use of persons actively engaged in public health work as item constructors has proved particularly valuable in avoiding the academic, textbookish flavor which so frequently characterizes examination material. All questions prepared by the "constructors" are next submitted in groups of fifty or more to "reviewers," specialists whose judgment is regarded as authoritative and of whom two hundred and twenty-three have functioned in this capacity. These reviewers contribute their services without compensation, and Dr. Lillian D. Long, Psychometrician of the Unit, considers that the outstanding thing which differentiates this testing program from all others is the extent of the services con-

tributed by representatives of the professional groups involved. To date, over 4,400 specific examination questions have been prepared in environmental sanitation, over, 3,300 in laboratory work, nearly 2,500 in nursing, over 800 in engineering, nearly 500 for health officers, and between 100 and 250 in each of the fields of vital statistics, medical social work, and health education.

The process is controlled at all stages by the participation of "consultants" of two types, consultants in the technique of testing procedures and consultants in the various fields of subject matter covered (nursing, laboratory work, sanitation, health administration, vital statistics, health education, and medical social service). When a request comes in for an examination, the job specifications laid down by the state or city are reviewed and the subject-matter consultant, in conjunction with the test-consultant, selects the series of questions best suited to appraise the knowledges called for by the particular job specifications and the known status and needs of the area in question.

The states receive from the Merit System Unit three copies of the examination, including instructions to the candidate, the answer booklet and the answer key—all ready for duplication by the state. The American Public Health Association makes this material available to the states only with the understanding that the state is not to release it or publish it in any form without the approval of the Association. This stipulation is necessary in order to safeguard the confidential nature of the examination material. The cost of an examination is related to the level of the position for which it is prepared and is computed on a non-profit basis.

To date, 190 examinations have actually been provided, including 94 in nursing, 50 in laboratory work, 30 in sanitation, and smaller numbers for health officers, medical social workers, health educators, vital statisticians, and nutritionists. Twenty-three states (Alabama, Arizona, Delaware, Illinois, Idaho, Kansas, Kentucky, Louisiana, Massachusetts, Mississippi, Missouri, Nebraska, Nevada, New Mexico, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, West Virginia, Wyoming) have participated, as have three cities.

A final step in this process of developing diagnostic instruments for the selection of public health personnel is, in a sense, the most essential—namely, the evaluation of the effectiveness with which the preceding steps have been taken. A first approach to such an evaluation is the determination of the so-called internal consistency of the examination, or the degree to which the responses to the individual items agree in selecting the better as opposed to the poorer candidates. In order to determine whether this is the case, statistical analyses are undertaken to discover for each individual item whether the candidates who answered it correctly scored high on the whole examination, and whether the candidates who answered it incorrectly scored low on the entire examination. If the opposite situation should happen to obtain, that particular item would be considered as pulling against the discriminating work being done by the rest of the test and would, therefore, be considered unsatisfactory for use with this particular group of candidates. The difficulty level of the questions is also determined. Items which are either passed or failed by the entire group are useless as discriminators and probably should not be included again in examinations at this level. The reliability of the test, that is, the consistency with which it would rank the competitors in the same order if it were given more than once, is determined.

Furthermore, the Unit is now making continuing studies of the degree to which the examinations, as applied in the field, actually prove to be effective in measuring the qualifications of public health workers. The states have been coöperative in returning results to the Unit for analysis, and a number of experimental projects have been undertaken for evaluation purposes. Two hundred Visiting Nurse Association staff nurses were, for example, given a suitable examination and their scores were compared with supervisors' ratings. Six schools of public health nursing have given an appropriate examination to their students and compared scores with the students' final grades. Such investigations make it possible to say that the examinations prepared do, in fact, perform the task they are designed to perform—namely, to select the most highly qualified of the candidates and to rank examinees in order comparable to their ability as determined by some independent measure.

Out of the accumulating experience of the Merit System Unit have now emerged certain clear-cut goals toward which future activities of the Unit might profitably be directed. Among these are: extension of the Unit's services to city and county civil service systems to provide them with sounder bases for the selection of public health personnel; increasing the availability of examination material to schools of basic and special training in public health where it may be used as a tool for evaluating both students and curriculum; finally, and of major importance, enlargement of the Unit's services to the states to include duplicating, scoring, and analysis service, and the appointment of a field representative of the Unit whose function it would be to familiarize states with the services of the Unit, to strengthen the relationship between Merit System Unit agencies and official public health groups, and supply the Unit with information which would be valuable in the preparation of examinations.

#### REFERENCES

1. Burney, L. E., and Hemphill, F. M. Merit System in Public Health. *A.J.P.H.*, 34:1173, 1944.
- Atwater, R. M., and Long, L. D. New Methods for the Selection of Public Health Personnel. *Canad. Pub. Health J.*, 36:1, 1945.

## THE CENTENARY OF PANUM

IT is historically true that our modern theory and practice with regard to the control of communicable disease actually developed on the basis of Pasteur's laboratory studies of bacteriology. It is often forgotten, however, that the essential clues to an understanding of this problem had already been unravelled by three pioneers in field epidemiology before an epidemic among silkworms led Pasteur on from the study of fermentation to that of contagious disease. By 1860, Panum, Snow, and Budd had laid the basis on which a sound system of control would undoubtedly have been built, even if the germ theory had not been demonstrated by bacteriological experimentation.

In this connection Panum's work was less significant than that of his two English contemporaries because it dealt with a disease which had generally been accepted as contagious since the 14th century; although Sydenham never mentions its contagiousness and it was held by many that measles could at times arise spontaneously. It was, however, the intestinal diseases, typhoid and cholera, spread by water and in other indirect ways, which formed the real battleground between contagionists and miasmatisists; and it was on this battle front that the victories of Snow and Budd were won.

Nevertheless, Panum's study was of major significance; and it was the first really complete and convincing contribution of modern field epidemiology. The occasion was an epidemic of measles in the Faroe Islands where there had been no cases of this disease for 65 years so that when infection was introduced in 1846, more than 6,000 of the 7,782 inhabitants fell victims to it. In villages where the epidemic occurred at all, 19 out of 20 persons were attacked. J. A. Doull estimates the total death rate at 23 per 1,000.<sup>1</sup>

Peter Ludwig Panum, before he had completed his full hospital training, was sent out with A. Manicus to study the situation. As Panum said in one of his later papers, "The circumstances under which the disease was observed were so favorable that similar ones were rarely, if ever presented to an observer." The largest community on the islands had only 800 inhabitants. In general, the population of the area was so separated in the coastal valleys of seventeen islands that each tiny settlement was an isolated community in which the history of the disease could be studied independently. Panum obtained complete data on the spread of the epidemic in fifty-two such areas. By observations repeated from village to village, he established the incubation period of the disease as 13-14 days. He concluded that infection had generally occurred when the primary case was in the eruptive stage. He was led by his observations to doubt the prevalent view that the period of desquamation was infectious, having failed to find a single case traceable to exposure after the disappearance of the rash.

Panum was inclined—though with some hesitation—to accept the spread of the contagion by clothing and other fomites; and he furnishes good evidence of the lasting immunity acquired in measles, having himself interviewed ninety-eight old persons who had had previous attacks and all of whom escaped in 1846.

Panum has no curiosity as to the nature of the infective agent—certainly no conception of a *contagium animatum*. He apparently holds to the conventional view of contagion as due to gaseous emanations—"exhalations from the patient which are strongest during eruption and on the first day of efflorescence, and the peculiar acidulous odor of which is most characteristic at this time." On one point, however, he was crystal clear. He says, "If among 6,000 cases, of which I saw and treated 1,000 myself, there was not a single one in which it was justifiable to attribute the affection to a miasmatic origin, while at the same time it was everywhere clear that the disease had spread from man to man and from village to village by means of the contagium (be it by direct contact with an ill person or by infected clothing and the like) then one is certainly justified at least to doubt very much the miasmatic nature of the disease."

Panum's later career was a distinguished one. He was appointed professor of physiology, medical chemistry, and pathology at Kiel in 1852, and later filled a similar post at Copenhagen. He was a pioneer in the laboratory study of physiology and pathology and made notable contributions to medical education. He was probably the leading figure in the Scandinavian medicine of his time.

Panum's claim to a place in the Valhalla of Medicine rests, however, upon his publication in Danish in 1846 and in German in 1847 of his "Observations made during the Epidemic of Measles on the Faroe Islands in the year 1846."<sup>1</sup> The episode would be hard to parallel in the history of medicine. Here was a boy just out of medical school who wrote one of the classics of our science. True, the opportunity was a unique one; but the way in which Panum utilized this opportunity was equally remarkable. The diligence and discrimination with which he collected his data and the logic and objectiveness with which he analyzed and

interpreted these data were well-nigh flawless. They could not have been improved upon by a Budd or a Frost at the height of his maturity. We do well to remember Peter Panum in 1946.

## REFERENCE

1. Panum, P. L. *Observations Made During the Epidemic of Measles on the Faroe Islands in the Year 1846*. Delta Omega Society, 1940.

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## Fellowships for Engineers and Physicians

Announcement is made by Surgeon General Thomas Parran of the U. S. Public Health Service that a grant for the establishment of 125 Fellowships to train sanitary engineers and physicians in public health has been approved by the National Foundation for Infantile Paralysis. These fellowships are similar to those for health educators, announced in the May, 1946, issue of the *Journal*.

Each Fellowship provides a year's graduate training in a school of public health or a school of sanitary engineering. The Fellowships will be administered by the Committee on Training of Public Health Personnel, which consists of representatives of schools of public health, the State and Territorial Health Officers, the American Public Health Association, and the U. S. Public Health Service.

The Fellowships are available either during the academic year beginning in the fall of 1946 or the fall of 1947, and are open to men and women, citizens of the United States under 45 years of age.

The purpose of the Fellowships is to aid in the recruitment of trained public health engineers, health officers, and directors of special medical services to help fill some of the 300 vacancies for public health engineers and 900 vacancies in public health medical positions existing in state and local health departments over the country. The Fellowships are reserved for newcomers to the public health field, and are not open to employees in state and local health departments, for whom federal grants-in-aid are already available to the states.

Applicants for Fellowships may secure further details by writing to the Surgeon General, U. S. Public Health Service, Attention: Public Health Training, 19th and Constitution Avenue, N.W., Washington 25, D. C. Owing to the anticipated heavy enrollment in graduate schools, completed applications for training in the fall term of 1946 should be filed promptly. The awards committee will act on applications on the following dates: July 15 and August 1.

# Credit Lines

## THE WAR AGAINST SUBSTANDARD EDUCATION

With the title "Unfinished Business in American Education," the American Council on Education summarizes the results of a recent study into public school education as practised in the United States. The authors, John K. Norton of Teachers College, Columbia University, and Eugene S. Lawler of Northwestern University, have done a job that will be the envy of every publicity person in the health and welfare field.

In a 65 page pamphlet they have translated the substance of a two volume report *An Inventory of Public School Expenditures in the United States* into graphic form that both pleases the eye and enlightens the mind. Their first admonition is "Let us start another War"—against illiteracy and unequal educational opportunity, of course. They point out that equal opportunity is a myth when some children have the benefit of schools spending \$6,000 per classroom unit and others of those spending \$100 or less. Nor do they let the rich states rest on their laurels because they spend as much or more than the median. One chart relates effort to income or levels of support. Mississippi, for example, which has the lowest level of support of any state in the Union, far outstrips any other state in effort which is nearly five times as great as support. Rich states like New Jersey, California, New York, Pennsylvania, Ohio, Illinois, and Michigan, on the other hand, have a lower level of effort than of support.

This pamphlet and the book it summarizes are of immediate interest to public health workers; first because they portray conditions that are largely

paralleled in public health, and second because they are an outstanding illustration of an effective means of focusing public attention on a problem.

## CANCER EDUCATION IN A RURAL AREA

Credit Lines is indebted to Albert E. Heustis, M.D., M.P.H., Director of the Branch County, Mich., Health Department for the following example of a cancer education program in a rural area:

"Community planning for health education in the field of cancer has been uniquely demonstrated in a rural Michigan county. This is one of the earliest examples of physicians, lay groups, teachers, and school children working together in a coördinated rural program of cancer information."

"The idea originated with L. E. Davidson, publisher of the *Coldwater Daily Reporter*, who provided the financial backing. He sought the advice of the Cancer Consultant of the Michigan Department of Health, Dr. F. L. Rector, and asked the County Health Department to participate.

"A planning meeting was arranged and several interested citizens met with representatives of the County Medical Society. The consultant presented the idea of a continuing cancer education program and the Director of the County Health Department was elected general chairman.

"The objectives established were to induce those with suspicion of cancer to consult their own physicians early and to provide the doctors with help in the establishment of the diagnosis of early cancer.

"The first step was to tell the story of cancer—what it is and what can be done about it. This was designed both

to provide general information and to remove the fear which has so often stood in the way of an early diagnosis. It was directed at every person in the county through the schools and through others who could read or listen.

"The State Consultant prepared a series of brief, factual, understandable articles on "The Story of Cancer," which were prominently featured on the front page of our local paper. In addition, both the Consultant and the entire staff of the County Health Department made themselves available for group discussions. Our health educator was of great help in arranging the schedule. She canvassed community groups and worked through their program committees. The Farm Bureau, granges, service clubs, mothers' clubs, study groups, parent-teachers associations, and township organizations were brought into the plan. For the most part the talks given were illustrated with slides or movies, and in each case supplemental printed material was available for distribution.

"The libraries participated in the project by the display and circulation of cancer information.

"In the schools the program started with a series of five 2 hour illustrated talks for high school science teachers. These were later expanded to include anyone interested. Four of the sessions were given by the Cancer Consultant, the fifth by several members of the Medical Society.

"Next, in the school plan, came a number of single talks to high school students at assemblies and in certain classes. These were frequently illustrated, time was allowed for discussion, and printed material on cancer was made available to supplement the basic facts presented. Moreover, instructional units were given to high school teachers for use in their classes.

"The final step in the school program provided for distribution of literature

on cancer to every student in every school. This material was intended for parents as well as pupils. Extra copies were made available for distribution to homes not represented by the school children.

"The portion of the program designed to help the doctors was developed into a Cancer Teaching Day. Cases suitable for operation and certain diagnostic problems were assembled by the local medical men and three qualified and capable specialists from the state university were invited to spend an entire day in the rural hospital. These included a gynecologist, a general surgeon, and an internist. The morning was given over to an operative clinic of three cases and ward rounds, while a general tumor conference of seven cases was held in the afternoon. In the evening, the visiting doctors presented illustrated talks on "cancer" at a dinner meeting of the Medical Society to which physicians from the surrounding territory were invited.

"The fine public spirit of the local newspaper publisher served both to crystallize public sentiment about the cancer problems and to focus it into an active, protective, participating program. It could not have been done as completely or as effectively without his genuine interest."

#### USING AVAILABLE YARDSTICKS

Two items in the 1945 annual report of the Montgomery County (Maryland) Health Department are significant as symbols of local application of yardsticks that have been developed by the Association to measure performance and stimulate its improvement.

The report says about tuberculosis: "Our participation in the *Evaluation Schedule* showed one glaring need in tuberculosis control—only 37 of the 80 active cases reported before death in 1944 were hospitalized. The record we are turning in for 1945 is 49 out of 65."



The shortage of public health nurses is graphically illustrated by two companion charts showing how many nurses would be required for the minimum of one nurse per 5,000 population, and how many the county provided for each year beginning in 1932. At that time there were fewer than one-fourth of the minimum standard, by 1941 more than half the minimum need were employed; at the peak in 1943 nearly three-quarters; in 1945 the number fell again to only slightly over two-thirds the minimum recommended.

#### MOBILE X-RAY UNITS

Illinois and Montana are among the states whose health departments have recently been provided with mobile x-ray units. The Illinois Department has four units. It began its campaign for mass surveys by offering chest x-rays to all state employees in Springfield. About three-fourths accepted the invitation, and so many asked to have their families included that one unit was needed at the capitol for an extended period. Groups, industrial or otherwise, in various parts of the state, may arrange for the services of one of the units through full-time city, county, or district health departments.

On January 1, 1946, Montana's law creating a tuberculosis division in the State Department of Health became effective. As a part of the program the department received a mobile x-ray unit on loan from the Montana Tuberculosis Association. It will be staffed by a doctor, nurse, and x-ray technician.

#### REGIONAL PROGRAMS FOR SMALL COUNTIES

The Tennessee State Planning Commission publishes *The Tennessee Planner* bi-monthly. The February, 1946, issue, which is Vol. 4, No. 4, says, "Very few counties in Tennessee are large enough and wealthy enough to

support good public library systems alone. So it is advantageous for several counties to combine their resources. Regional library service is a plan devised to include several counties whose combined efforts aided by state funds can render greater and more efficient library services to an entire area. Counties participating in the program surrender none of their control over library matters. . . . That the regional plan works has been demonstrated in Tennessee." These words are found in an article on Regional Library Service in Tennessee by Martha Parks, of the State Department of Education, and Malinda Jones, Research Librarian of the Planning Commission. If you substitute local health service for library service or library systems in the above quotation you have the basic principle of Haven Emerson's *Local Health Units for the Nation* which suggests about 1,200 regional local health units to cover the entire country. For Tennessee the suggested units number 23. Library units so far planned or developed number 7, in addition to the 13 counties served by the regional system of the Tennessee Valley Authority which began the regional program and stimulated its development in other parts of the state.

#### EXPANDING THE CANCER PROGRAM

Those who are planning work of the voluntary agencies in cancer control will be interested to obtain from the New York City Cancer Committee, 130 East 66th St., New York 21, an outline of the Plan for "Enlarged Program of Action of the New York City Cancer Committee," as recently adopted by the Board of Directors. Proposing "a bold, decisive and sensible popular instruction program," the outline includes health education for professional groups, through the schools and other channels. It is proposed that mobile "Little Red Doors" should be set up, that at least

one demonstration area should be arranged, that cancer should be made a reportable disease in New York City, and that tissue diagnostic services should be expanded.

#### ONE DOLLAR PER CAPITA IS A MINIMUM

"Dr. Emerson and his associates have performed a task of technical planning with great diligence and competency. The report concedes that expenditures of \$2.00-\$2.50 per capita would be advantageous, but selects the minimum of one dollar as an attainable goal beyond the 1942 average of 61 cents." These words are from a review of *Local Health Units for the Nation*, by Professor W. Wallace Weaver in the January *Annals of the American Academy of Political and Social Science*. Credit Lines compliments Professor Weaver on his excellent review of the report of the A.P.H.A. Subcommittee on Local Health Units, and particularly for his emphasis upon the attainable minimum goal set by the committee. Too often the readers of the report have assumed the committee's proposals for personnel and expenditures for local health units to be ideal.

#### FOOD VALUE CHARTS

This set of 12 charts is a revision of a similar series of teaching aids published in December, 1942. It has been prepared with the coöperation of nutritionists in Philadelphia and of the Division of Nutrition, Bureau of Maternal and Child Health, Pennsylvania Department of Health. The charts continue to emphasize foods relatively low in cost and commonly available in most parts of the country. Simplicity of presentation on the face of the charts makes them useful for teaching purposes.

The Recommended Dietary Allowances, revised in August, 1945, by the National Research Council, are recorded on the back of each chart to aid in

working out the contributions different foods make to adequate diets for individuals of any age. The set may be ordered from the Philadelphia Child Health Society, 311 South Juniper Street—Room 609, Philadelphia, Pa. 50 cents.

#### NEW HAVEN HOUSING AUTHORITY

"Today and Tomorrow" is the title of the 1945 report of the New Haven Housing Authority recently published. It includes Chapter 5 of the Story of Low Rent Housing in New Haven, financial statements, and excellent photographs. A good illustration of an effective report of stewardship.

#### FACTS ABOUT CHILD HEALTH

The Children's Bureau of the Department of Labor introduces its *Facts about Child Health 1946* with these words "No wars we win, no cities we build, will matter if the minds and bodies of our children are not made strong enough to do all that we dreamed of doing when the new peace would come."

It summarizes the facts about the nearly three million babies born annually and the more than forty-six million children under 20—where they live, what they need for health and growth, who is responsible and what is needed for their health, and how well their health is being guarded.

The booklet includes an analysis of the maternal and child health services provided by the Social Security Act and an analysis by states of the five and one-half million dollars paid to states in 1945 for maternal and child health services.

#### GARAGE SAFETY

The Public Health Education Section of the Washington State Department of Health is distributing *Garage Grips* widely throughout the state. Illustrated with comic section cartoons.

it tells all about how to avoid accidents in a garage. It was written by C. D. Yaffe, Chief Industrial Hygiene Engineer, and R. H. Scott, Industrial Hygienist of the Industrial Hygiene Section, headed by Lloyd M. Farner, M.D.

#### NATIONAL HEALTH AND WELFARE RETIREMENT PLAN IS A REALITY

*Benefits* for March, 1946, is issue No. 1 of the *Bulletin of the National Health and Welfare Association*, the retirement plan for health and welfare organizations. This *Bulletin* summarizes the history and present status of the retirement plan; organization was begun in June, 1944, and the plan became effective in October, 1945, with about 7,000 participants in 750 health and welfare organizations throughout the country. By March, 1946, six death claims had already been paid.

The offices of the Association are at 441 Lexington Avenue, New York 17. Its executive secretary is Homer Wickenden.

#### MILITARY DEMONSTRATION AREA

The Medical Field Service School of Carlisle Barracks, Pennsylvania, has recently published a report of the Wakeman Field Demonstration Area of the Department of Military Sanitation. The pictures and the running comment are an excellent example of the use of visual demonstrations in education. Wakeman Field was an outdoor demonstration area in teaching military preventive medicine with large classes and the diversity of sanitary problems in a global war. Here simultaneous demonstrations for three classes of 250 men each could be conducted.

#### PENICILLIN—UP-TO-DATE

For those who want to keep up-to-date on penicillin, the Commercial Solvents Corporation publishes about six times a year a bulletin called

"Penicillin—C.S.C. Reporter." This summarizes rather fully the current medical literature on penicillin classified under the various medical conditions for which the drug has been used. The material is printed on sturdy paper and is pre-punched for a loose leaf notebook. With the January, 1946, issue is included an index of the six issues of Volume 2 for 1945. An index was also prepared for Volume 1, some copies of which are still available.

#### LABOR DIVISION OF BLUE CROSS

The Blue Cross Hospital Plan Commission, an Association of local Blue Cross plans, has established a labor division of the national enrollment office. This labor division was planned to coordinate Blue Cross hospitalization with union health insurance programs. The new division was inaugurated with a booklet *Hospitalization for Trade Union Members*, prepared as an aid to trade union leaders wishing to encourage enrollment of their members.

#### THE WAR WOUNDED WALK AGAIN

Another saga of pure heroism and complete devotion, to the end that men shall walk, is told by Barrie Stairs in the *Saturday Evening Post* of March 30. Soldiers at the Thomas M. England General Hospital at Atlantic City, paralyzed from the waist down by war injuries, are learning to rise from their beds and walk, thanks to the skill, imagination, and personal devotion of Captain William George Kuhn, Jr. Here is another modern miracle of medical science.

#### SOCIETY FOR CRIPPLED MOVES

The National Society for Crippled Children and Adults celebrated its move last autumn from Elyria, Ohio, to Chicago and the expansion of its activities, with *New Perspectives*. This is a beautifully printed and illustrated pamphlet. It summarizes not only the

history and activities of the organization, but also state and federal activities in the care of the handicapped, and has a number of graphically illustrated articles on the occupations, earnings, and performance of disabled employees. The present address of the organization is Chicago; its Executive Director is Lawrence J. Linck.

#### HEALTH EDUCATION IN OREGON

Credit Lines is indebted to Howard S. Hoyman, Professor of Physical Education in the University of Oregon, for details of Oregon's health education and physical education program. The Oregon State Joint Committee for Health and Physical Fitness, established in 1939, sponsored Oregon's new health instruction law which became effective on July 1, 1945. It is a mandatory law providing for a combined health instruction and physical education program in all elementary and high schools of the state.

In addition to its sponsorship of the law, the Joint Committee has stimulated preparation of teachers' manuals in health instruction. Two have been completed—*Health Guide Units for Oregon Teachers* (Grades 7-12), by Professor Hoyman, and *Health Instruction Manual, Elementary Schools*, by Rex Putnam, State Superintendent of Public Instruction. Two others on physical education for girls and boys respectively, grades 1-12, are not yet ready for distribution.

The Joint Committee is also considering the establishment of a health materials depot which may serve as a central source of health teaching aids, the improved health education of teachers and administrators, and the evaluation of the health instruction works of schools.

#### HELPING THE VETERAN

Out of the welter of advice on how to treat and what to do for veterans comes

a 72 page leaflet of sound, sensible suggestions based on the authoritative knowledge of specialists. *Helping Disabled Veterans* (American National Red Cross, Washington, D. C.) was prepared for the Home Service worker, but should be in the hands of all those who are counseling veterans for any purpose or welcoming home those who are markedly disabled. Employers of veterans will find the information helpful in making successful job adjustments and public health workers will find themselves able to answer constructively the many questions of families and of the veterans themselves after reading this booklet.

#### TUBERCULOSIS SLOGAN IN WEST VIRGINIA

Dr. Robert L. Smith, the Director of the West Virginia Bureau of Tuberculosis Control, conducted a competition to choose the slogan for the back of the new mobile tuberculosis unit. The final slogan was devised by Hattie Sample and reads—

Tuberculosis  
X-Ray Finds It  
Treatment Cures It!

#### WORTH ACQUIRING

The National Tuberculosis Association has a quartet of letter size posters that sing the health praises respectively of good posture, adequate sleep, and clean surroundings, and that urge you to swat the fly wherever you find him. In high colors, amusing illustrations and capsule language. Also two leaflets urging chest x-ray and early diagnosis of tuberculosis. National Tuberculosis Association, 1790 Broadway, New York 19.

*Food the World Over: Puerto Rican.* An imaginative guide for nurses, dietitians, and nutritionists, this booklet states its premise thus. "If we are to succeed in teaching good food habits to people of varying national back-

grounds, we must know the food habits and the backgrounds from which these habits are acquired." A brief history of Puerto Rico follows as well as a discussion of food habits, suggestions for supplementing typical meals with similar foods more easily available here, and some actual Puerto Rican recipes. This is the first in a series which will include similar booklets on Italian, Jewish, Polish, Syrian, and Sectional American dietaries. Nutrition Service, Visiting Nurse Association of Brooklyn, 138 So. Oxford Street, Brooklyn 17. 20 cents.

*A New Challenge*—calls attention to the effect of new drugs and modern methods of community control of the venereal diseases. Life Conservation Service, John Hancock Mutual Life Insurance Company, Boston 17. Ask also for *Memorandum on Health Publications* which is a list of booklets on health and safety currently available from the company's Health Education Service.

*The Outlook for Women in Occupations in the Medical and Other Health Services: Physicians' and Dentists' Assistants*—One of a series prepared by the Women's Bureau of the Labor Department to present the post-war outlook for women in particular occupational fields. Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 10 cents.

A set of four posture charts of display size has recently been prepared by the Samuel Highbury Camp Institute for Better Posture, Empire State Building, New York 1. In bright colors and good print they are good health education aids. The Institute also announces two posture leaflets, *The Human Back: Its Relationship to Posture and Health* and *Blue Prints for Body Balance*. All of these materials are free of charge.

*Making Marriages Last and Dating*

*"Do's and Don'ts" for Girls*—are two very effective leaflets for use in the guidance of young people. Each has a good brief bibliography. Available at 5 cents each, or less in quantity orders, from the American Social Hygiene Association, 1790 Broadway, New York 19.

*Soap Carving: Aid in Rehabilitation*, by Ernest Bruce Haswell. The interest in the author's earlier *The Mental Ward Becomes a Studio*, which was the report of an experimental class in soap sculpture for patients in an Ohio mental hospital, prompted Procter and Gamble to encourage the extension of Haswell's work to an Army Air Force Convalescent Hospital near Cincinnati. The present booklet tells the story of the new venture. It is illustrated with photographs of many of the patients' carvings. Says the report, "Because we believe the suggestions made in this report can be helpful to others engaged in occupational therapy we are publishing this study for gratis distribution to interested groups." Procter & Gamble, Cincinnati 1, Ohio.

*Straight from the Shoulder and Don't Be Your Age*—To conserve the busy time of the doctor is the aim of these health booklets. The first is for young men 18–35, written in their language and with snappy illustrations. It discusses grooming, posture, food, and exercise. The other, prefaced with a graph of the increase in longevity between 1895 and 1945 has as its theme "Add more years to living and more life to years." This is for adults over 35 and reinforces the already well known simple facts about the hygiene of the later years. These, together with *Ice Cream Through the Years*, which gives its history and its usefulness as a food, can be secured in quantity from the National Dairy Council, 111 North Canal Street, Chicago 6.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**Preventive Medicine and Public Health**—By *Wilson G. Smillie, A.B., M.D., D.P.H., Sc.D.(Hon.)*. New York: Macmillan, 1946. 607 pp. Price, \$6.00.

There has long been a real need for a textbook of preventive medicine and public health that presents the subject from the point of view of the student who is aiming to practise clinical medicine, not public health, and who, therefore, needs to learn how to apply preventive principles to the everyday problems of clinical practice. Such a student has little need for much of the detail to be found in the many excellent texts that approach the subject from the strictly public health angle; he can turn to them for reference if occasion arises. On the contrary, he has an urgent need for a discussion of many aspects of preventive medicine that heretofore have found little place in most texts, such as mental hygiene, nutrition, degenerative diseases, medical social work, and the rôle of the public health nurse.

In his new book, *Preventive Medicine and Public Health*, Dr. Smillie chooses as his "major thesis . . . that the physician who is in practice has the obligation to his patients and to his community to prevent illness and to promote family and community health." More specifically he states that "the major purpose of this text has been to point out the opportunity of every physician to incorporate health education as an integral part of his medical practice."

The volume is divided into six sections—an introduction which includes a surprisingly long section on statistics and statistical methods, followed by sections on environmental sanitation, communicable disease control, child

hygiene, adult health protection and promotion, and public health administration. Throughout the volume much of the conventional detail has been omitted while emphasis has been placed on those aspects of preventive medicine that are most applicable in the health care of the patient. Yet public health is not completely neglected, for the last section introduces the student to public health agencies and shows the relationship that should exist between the physician and the organized community program. In presenting this topic, Dr. Smillie has avoided the common error of assuming that the student is interested in or even needs to know the detailed internal structure and operation of the health department, or the technical details of many of its most important procedures.

While approaching controversial subjects from an objective point of view, Dr. Smillie has not hesitated to express his own opinions clearly and forcibly on such debatable matters as socialized medicine and birth control and to give the reasons for these opinions. Special attention has been given to the discussion of new preventive measures that have been developed during the war years. Case histories have been used liberally and effectively throughout the volume to illustrate the major points, histories selected to show examples of proper preventive practice and of the ill consequences of neglect of prevention. Moderate use has been made of tabular and graphic material. The bibliography is short, well selected, and up-to-date.

Although it is easy to criticise details of a volume of this character—and the critics will be many—one should not lose sight of the broad ob-

jectives and aims of this work, viz., to present a point of view to a group of students who are normally little interested in preventive medicine. The critical test of such a volume is the impression it will create upon this group of students, not upon a reviewer who has also striven to inculcate the student with the basic principles of prevention. This book seems to have gone further than any previous volume in reaching the student level and to contain both the point of view and the subject content for which the teacher of preventive medicine has so often striven. The case histories, which have been excellently chosen, add immeasurably to the value of the volume.

It is unfortunate that a book that is so excellently conceived and has so many fine features, should contain the number of minor defects to be found in this volume. Errors of fact are not infrequent, so that the teacher must be constantly alert to point out these pitfalls to the student. The irregular distribution of bibliographic references whereby they are collected at the end of certain chapters, rather than at the end of each chapter or section, is confusing. The extent of statistical detail at the very start of the volume may dampen the enthusiasm of many students whose interests are essentially clinical.

The reader will note numerous defects of this character which should be corrected in an early revision. These defects are unfortunate but should not obscure the great potential value of a book that has surpassed all others in presenting the point of view of preventive medicine as an integral part of clinical practice.

GAYLORD W. ANDERSON

*Effective Living*—By C. E. Turner, D.P.H., and Elizabeth McHose, M.A. (rev. ed.) St. Louis: Mosby, 1945. 432 pp., 164 illus. Price, \$2.00.

This is a revised edition of an earlier

book, the purpose of which is "to help youth discover ways of effective living." The material has been prepared with the young people of high school level in mind. The selection of the material was based in part on actual classroom situations in high schools.

The book is organized in three general parts: *Effective Living for the Individual*, *Effective Living in the Family*, and *Effective Living in the Community*. Each part is divided into several units which may be used as teaching units. The section on individual health, like many texts on personal health, presents first the structure and function of the various parts of the body, then the hygiene, and, lastly, deviations from normal or disease conditions of each part.

At the end of each unit are lists of health checking questions for the use of students, as well as a very comprehensive list of suggestions for problems and activities for class use. These should be valuable to the teacher as well as to the pupil. Also, there is a bibliography for each unit. It is to be regretted that in many instances this bibliography has not been brought completely up to date.

The third part of the book on *Effective Living in the Community* is unusually well presented for high school students and should do much to give students an understanding of their responsibilities for the health of their own communities.

Throughout the book one finds certain scientific inaccuracies that are to be regretted. For example, the statements, "Quinine kills the malarial parasite in the blood," and "by using an alum compound of this substance (diphtheria toxoid) only one injection is needed," are not in accord with medical knowledge and recommended practice.

Except for this apparent lack of editing on the accuracy of certain

medical facts, the book is an excellent presentation of this material in a style that should appeal to the age group for which it was written, and should do much to motivate young people to put into practice better habits of living.

RUTH E. BOYNTON

**Tuberculosis Industrial Nursing and Mass Radiography—***By Julie E. Miale, R.N. New York: National Tuberculosis Association, 1945. 67 pp. Price, \$.50. Copies may be purchased through your state tuberculosis association.*

This monograph contains much valuable (reference) material for the industrial nurse. The Four Cardinal Principles mentioned apply equally well to the establishment of any health program in industry.

The material has apparently been prepared with thought for the industrial nurse in the small plant working without the benefit of a medical director to carry the responsibility of the administrative planning and organization of the health program. This thought is timely since the number of these nurses is far greater than the number who do not need to carry such responsibility.

Detailed suggestions are made to guide the nurse in stimulating the interest of management, the plant physician, and labor in the tuberculosis control program. Suggestions are also made for each step in the planning of the program, the procedures during the taking of the x-rays, and finally for the follow-up, which is essential if the program is to have lasting value. Again, the suggestions will be equally helpful to the nurses who are planning and developing other programs.

The appendix contains suggested publicity materials and record forms, as well as a floor plan and flow chart for the taking of x-rays. A list of selected references relating to tuberculosis control is also included.

However, attention should be called to the fact that in most of the states, the state and local departments of health are legally responsible for tuberculosis control. The industrial nurse then should look first to the local or state department of health for assistance in planning the program in industry. The state and local tuberculosis associations render valuable assistance in the educational program and frequently in the loan of personnel or equipment or financing of the x-rays.

F. RUTH KAHL

**What Every Teacher Should Know About the Physical Condition of Her Pupils—***By James Frederick Rogers, M.D. Washington: U. S. Govt. Ptg. Office, 1945. 19 pp. Price, \$.10.*

It is increasingly recognized that the teacher is the one person in the school who is able to give really continuous day to day health supervision of each pupil. Because of her continuous daily contact with the pupil, the teacher is in a position to detect deviations from normal appearance and behavior more quickly than the nurse, physician, or others in the school. To give her the necessary knowledge and techniques to carry out this function, teacher training institutions are providing theoretical instruction and experience for teachers in normal growth and development of children. Schools, as well, in their in-service education programs for teachers, are emphasizing physical and emotional health and the responsibility of the teacher for observing and reporting to the proper person—parent, nurse, physician, or to a health committee.

*What Every Teacher Should Know About the Physical Condition of Her Pupils* briefly discusses health appraisal, referral of pupils, and teacher assistance in communicable disease control.

Teachers working alone will like this handy guide to so many of their ques-



tions relating to the health of pupils. Teacher training institutions and those responsible for in-service training will welcome it as a reference. Every public health nurse working with teachers and every health committee studying pupil needs and working out programs for the promotion of pupil health will want a copy at hand. ALBERTA B. WILSON

**The Crime of Imprisonment—**By George Bernard Shaw. New York: Philosophical Library, 1945. 125 pp. Price \$2.00.

Here is George Bernard Shaw, the social critic, at his incisive best. He bares the logical, psychological, social, moral, pathological, and educational absurdities of the prison system, in prose which every specialist will find a glorious relief from that of his colleagues.

"Retribution (a euphemism for vengeance)" he finds is in conflict with Reform. Deterrence is a valid social objective, but he finds no evidence that our system of criminal punishment deters. Indeed, there is every evidence that it nurtures, schools, confirms, and multiplies criminals.

Now happily republished as a separate volume, Shaw's classic on the effect of the prison system was written more than twenty years ago to preface a British Labor Research Office study. Its conclusions do not differ significantly from those of Thorsten Sellin in his studies for the American Bar Institute or the studies of Sheldon and Eleanor Glueck. John Barker Waite's, *Revenge Costs Too Much*, in the May, 1946, *Harper's*, is cut from the same cloth.

No student of our criminal system should call himself educated until he has grappled with Shaw's thesis. But Shaw goes outside prison walls to discuss comparatively the problem of restraints in the community and in the home, and the nature of freedom as a

psychological and social concept. All those who administer regulations might well read and ponder. For child psychologists, the passage on Queen Victoria is especially recommended.

PHILIP S. BROUGHTON

**A Social Survey of Health and Illness in Urban Families—**By Paul B. Gillen. New York: Cornell Medical College, 1945. 55 pp. Price, \$1.00.

In this preliminary report, a health educator who is also a sociologist studies some 300 persons in 95 families by the use of a comprehensive questionnaire. The persons surveyed represent a low income group of predominantly Czecho-Slovakian extraction who live in a "social block" near a District Health Center on the east side of Manhattan.

Most of the study families were found to include at least one member with an active health problem at the time of interview, but because of poverty, only two-fifths of those ill were under medical care. Clinic services are in general satisfactory to this group. Health insurance is not yet widely used but the respondents are decidedly interested. Few attend educational meetings. The fault for this lies with us, the professional health workers; there is no lack of interest on the part of the people. We are probably equally to blame that their radio listening and health reading are predominantly from poor sources, such as newspapers. The health center has not yet "arrived" in the consciousness of this group. What limited recognition exists has been achieved by its clinical services rather than its educational efforts.

Valuable suggestions for modification of the health center program in large cities of the United States follow from analysis of the facts elicited. This report will interest administrators and health educators alike.

BERNARD M. BLUM

*Dietotherapy*—*Edited by Michael G. Wohl, M.D. Philadelphia: Saunders, 1945. 1029 pp. 93 illus. Price, \$7.50.*

With any rapidly advancing science, such as nutrition, it is always difficult to stop and summarize the current knowledge in book form. This volume is one of the most up-to-date and complete works in the field. It is not a treatise on dietetics alone, but considers nutrition in its broadest aspects. Each of the authors of the various chapters is a recognized investigator and authority in his respective field.

The work is divided into three parts: The first is entitled "Normal Nutrition" and deals with the rôle of the various foodstuffs, minerals, vitamins, and known essential elements and their interrelationship in health and disease. The second part deals with nutrition in periods of physiologic stress, such as in pregnancy, growth, aging, and in relation to infection and immunity. The third and last part deals with nutrition in disease. This section includes the rôle of nutrition in conditions affecting the various systems. In addition, a short current summary of each disease, its pathogenesis and symptomatology, precedes the discussion of the nutritional aspect.

The material is clearly and concisely presented with summaries, illustrative charts, tables, and diagrams. The bibliographies at the ends of chapters are as complete and current as one could desire.

The book concerns itself with the application of modern nutrition as applied to clinical practice. The public health aspects and survey methods are not discussed. It will fulfil the needs of the medical and surgical specialist, the general practitioner and the medical student. The importance of proper nutrition in disease is stressed and it can well be considered a reference text on the subject.

NORMAN JOLLIFFE

*How to Raise a Healthy Baby*—*By L. J. Halpern, M.D. New York: Prentice-Hall, 1945. 388 pp. Price, \$1.95.*

This helpful book presents in question-and-answer form innumerable questions on diet, training, and growth encountered by parents of infants and preschool children. Many of the questions are worded in such a way that a fairly technical answer is required. In general the answers are direct, simple and clear. In all instances the answers are accurate according to present knowledge, but a few of the answers would be improved by more explanation. This does not detract from the value of the book because answers do convey the idea that the individual's physician should be consulted. Hence the book stimulates individual medical supervision. Moreover, the book will be a useful reference for public health nurses and nursery school teachers as well as for parents.

The index has been carefully prepared and many cross-references add to the clarity of the book. The medical and scientific approach to problems in child management is emphasized. It is expected that those who read Dr. Halpern's concise book will find it helpful and will be stimulated to read more extensive references on child care and child development.

MARTHA L. CLIFFORD

*Psychology Applied to Nursing*—*By Lawrence Augustus Averill, Ph.D., and Florence C. Kempf, R.N. Philadelphia: Saunders, 1946. 496 pp. 55 illus. Price, \$2.50.*

The third edition of this textbook will be welcomed by the many instructors of student nurses who like to correlate their subject matter in psychology with the daily experience in ward and clinic. Entirely fresh material has been added, including new chapters on guidance of study, personal

adjustment of the student nurse, and, in Units VI and VII, hospital and personal situations have been carefully reviewed and expanded. Altogether this is a useful, clear, and dependable text for students, as well as graduates wishing to review the field.

DOROTHY DEMING

*The Jews and Medicine—By Harry Friedenwald, M.D. (2 Vols.) Baltimore: Johns Hopkins Press, 1944. 817 pp. Price, \$7.50.*

Anyone who doubts the beneficent influence of the Hebrew mind on the development of scientific medicine through the ages, in spite of tragic handicaps, would do well to read these two volumes by a distinguished ophthalmologist who inherited this subject and lived with it throughout a long and fruitful life. Anyone who is already convinced will also enjoy these rare snatches of history. The author makes it clear at the outset that he has made no effort at completeness. The emphasis shifts from chapter to chapter, epitomizing portions of the ancient and medieval periods in order to spare his readers the many laborious but satisfying years which he has devoted to his magnificent library on the subject.

The author has marshalled a great many documents in producing these volumes and has given us the fruits of his exhaustive researches in a way that marks him the scholar as well as the scientist. One wishes at times that the text had been brought up to date in a better chronological pattern and that many more Jewish scientists of note and institutions of medical learning had been given their due, but no one can ask more of one who has already made such a painstaking contribution to our knowledge of Jewish medical life during the formative eras of medical practice. This collection of essays belongs on the shelf of everyone who is in-

terested in the history of medicine, and it will yield many a gem to the reader who will examine its pages from time to time.

E. M. BLUESTONE

*The Social Problems of an Industrial Civilization — By Elton Mayo. Boston: Graduate School of Business Administration, Harvard University, 1945. 150 pp. Price, \$2.50.*

This volume has grown out of reflections based on studies of industrial organization and production. Its theme is that in industry, and indeed in the whole of industrial civilization, the application of the physical sciences—physics, chemistry, biology, etc.—has far outrun exact knowledge and application of the social sciences—psychology, sociology, political science, etc.

Studies in industry indicate that approval of the group; i.e., of a worker's fellow associates, is a vital but neglected factor in determining the volume of production, the amount of absenteeism, and the maintenance of morale. Teamwork and spontaneous coöperation are possible if thoroughly planned on a patiently gathered, factual background. This is relatively overlooked, not only in industrial administration, but throughout the activities of society.

If civilization is to escape threatening destructive forces, it must develop social skills and the social sciences out of lowly and pedestrian observation and an accumulation and interpretation of social facts which will make possible their application to industry and society on a level more commensurate with the development and utilization of technical skills and the physical sciences.

The author includes in his argument a sharp criticism of the failure of universities to develop the social sciences on sufficient observation of facts.

BAILEY B. BURRITT

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**Be Not Deceived**—For the years 1941–1945 the excess of births over deaths amounted to 7,750,000. This population increase was 2,500,000 greater than the preceding 5 year period. The outlook for a continuing increase in population is not as bright as would appear from these surface indications. Other countries too see through the short-lived population spurt and they are “taking steps.”

ANON. *The Outlook for Population Growth*. Stat. Bull. (Met. Life Ins. Co.), 21, 4:1 (Apr.), 1946.

**Where You'd Least Expect**—“The public health nurse has played an important part in malaria control.” So begins this paper which enumerates the nurses' functions in case finding, incidence surveying, home nursing care, and health education.

BISHOP, E. L. *The Prevention and Control of Malaria*. Am. J. Nurs. 46, 5:282 (May), 1946.

**There Should Be More of This**—These sixty-seven crystal clear statements about labor and delivery, hospital care after delivery, and home care after discharge from the hospital should resolve and settle for the apprehensive expectant mother most of her doubts and fears. Reprints are available.

BISKIND, L. H. *Alleviation of Anxiety during Pregnancy*. Mod. Med. 14, 5:67 (May), 1946.

**Despite Radioed Experting**—For about a year, half a group of 500 aircraft workers were given a six-vitamin and calcium supplement, the other half enjoyed a placebo. The super-vitaminized half evidenced some slight improvement in such minor indicators

as dryness of the hair and conjunctival transparency, but there was no symptomatic superiority discoverable. In fact the placebo group reported greater benefits in eye symptoms, gain in weight, and miscellaneous “improvements.”

BROOK, H., *et al.* *Nutritional Status of Aircraft Workers in Southern California*. Milbank Mem. Fund Quart. 24, 2:98 (Apr.), 1946.

**Straw in the Wind**—Three more outbreaks of streptococcal infections made resistant to sulfonamide drugs are reported from recent experience.

DELAMATER, E. D., *et al.* *Preliminary Report of an Outbreak of Streptococcal Disease Caused by a Sulfadiazine Resistant Group A, Type 17 Hemolytic Streptococcus (and two companion papers)*. J. Infect. Dis. 78, 2:118 (Mar.-Apr.), 1946.

**How Many Nurses?**—You will want to follow the reasoning by which this student of health economics arrives at the figure of one public health nurse to about 5,000 of population—for bed-side care in the home—or about 28,000 in all. How many more will be needed to carry out the educational work of official health departments and non-official health agencies cannot be computed until we know the eventual status of public health administration.

DUBLIN, L. I. *Notes on “Public Health Nursing in Relation to Illness.”* Pub. Health Nurs. 38, 5:213 (May), 1946.

**Good News**—Another heartening report on the value of influenza prophylaxis. During an epidemic in a university last winter, about 1 per cent of the vaccinated students succumbed whereas about 10 per cent of the unvaccinated came down with the disease.

FRANCES, T., JR., *et al.* The Protective Effect of Vaccination against Epidemic Influenza B. J.A.M.A. 131, 4:275 (May 25), 1946.

**Adding Life to Years, Not Years to Life**—In No. 1 of Vol. 1 of still another scientific journal, there is told the story of an exclusive club. Until you are over 65 you cannot become a member, regardless of pull or attainments. If you qualify you can attend lectures, play cards, read, listen to music or the radio, indulge yourself in craft work or just have tea and cake.

FUCHS, D., and LEVINE, H. The Hodson Community Center: An Experiment in Preservation of Personality. J. Gerontology. 1, 1 (Jan.), 1946.

**When Mumps Involves the Meninges**—Meningoencephalitis following mumps is an entity which can be diagnosed with the aid of new serologic tests. Health administrators will want to ponder over the findings of this study.

HOLDEN, E. M., *et al.* Mumps Involvement of the Central Nervous System. J.A.M.A. 131, 5:382 (June 1), 1946.

**Refreshing Candor**—Tomorrow's recruits for replenishing our city populations are today's rural children. Rural babies and mothers are not getting their share of health protection and as a consequence urban health too will suffer in the next generation. We have the means to provide competent rural health services but so far we've mostly talked around and about the job.

MOTT, F. D. A Public Health Program for Rural Arcas. Pub. Health Rep. 61, 17:589 (Apr. 26), 1946.

**For Better Equipped Sanitarians**—Wartime demand for health workers has hampered plans for developing well

trained staffs. Now that more nearly normal employment conditions are returning, it is to be hoped that well rounded training programs will be set in motion as the federal educational scheme originally envisioned.

MOUNTIN, J. W. Training Public Health Workers. Pub. Health Rep. 61, 21:725 (May 24), 1946.

**And Now Tuberculosis**—Most writers who have questioned prolonged bed rest as potentially harmful and of limited therapeutic value, have been careful to exclude from their diatribes the bed care of the tuberculous. Now comes a phthisiotherapist who challenges the concepts of bed rest in this field too. He asserts that supervision of rest is a medical responsibility demanding flexibility and individualization.

PECK, W. M. The Modalities of Bed Rest. Pub. Health Rep. 61, 18:626 (May 3), 1946.

**How to Get Rid of Rats**—Suggestions for organizing a community-wide rat poisoning project are set forth in useful detail.

RICHTER, C. P., and EMLIN, J. T. Instructions for Using ANTU as a Poison for the Common Norway Rat. Pub. Health Rep. 61, 17:602 (Apr. 26), 1946.

**Death Rates and Age**—Being highly allergic to abstruse logarithmic equations, I did not follow the reasoning, but it says in the summary of this paper that there is no proof we cannot extend active life an extra hundred years or so. Don't let this assertion raise your hopes—the paper doesn't tell how to do it.

SIMMS, H. S. Logarithmic Increase in Mortality as a Manifestation of Aging. J. Gerontology. 1, 1:13 (Jan.), 1946.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

- ADVANCING FRONTS IN CHEMISTRY. (Vol. II.) (Chemotherapy.) Edited by Wendell H. Powers. New York: Reinhold Publishing Corp., 1946. 156 pp. Price, \$3.25.
- AMERICAN FOUNDATIONS FOR SOCIAL WELFARE. By Shelby M. Harrison and F. Emerson Andrews. New York: Russell Sage Foundation, 1946. 249 pp. Price, \$2.00.
- APPENDICITIS IN CLEVELAND. By Howard Whipple Green, A.B., B.S., and Ralph M. Watkins, M.D. Cleveland: Cleveland Health Council, 1946. 57 pp. Free from publisher.
- A BIBLIOGRAPHY OF INFANTILE PARALYSIS. Edited by Morris Fishbein, M.D. Philadelphia: Lippincott, 1946. 672 pp. Price, \$15.00.
- CHILD PSYCHOLOGY FOR PROFESSIONAL WORKERS. By Florence M. Teagarden, Ph.D. New York: Prentice-Hall, 1946. 613 pp. Price, \$3.75.
- COLLEGE COURSE, RED CROSS HOME NURSING—INSTRUCTORS GUIDE. American National Red Cross. Washington: American National Red Cross, 1946. 150 pp. Free to colleges and universities through the local chapters of the ARC.
- THE COMMON SENSE BOOK OF BABY AND CHILD CARE. By Benjamin Spock, M.D. New York: Duell, Sloan & Pearce, 1946. 527 pp. Price, \$3.00.
- THE DIAGNOSIS AND TREATMENT OF PULMONARY TUBERCULOSIS. By Moses J. Stone, M.D., and Paul Dufault, M.D., F.A.C.P. Philadelphia: Lea & Febiger, 1946. 325 pp. 93 illus. Price, \$3.50.
- DOCTORS EAST DOCTORS WEST. By Edward H. Hume, M.D. New York: Norton, 1946. 278 pp. Price, \$3.00.
- FOR A STRONGER CONGRESS. Public Affairs Pamphlet No. 116. By Philip S. Broughton. New York: Public Affairs Committee, Inc., 1946. 32 pp. Price, \$1.00.
- THE GENUS IXODES IN NORTH AMERICA. National Institute of Health Bulletin No. 184. By R. A. Cooley and Glen M. Kohls. Washington: U. S. Gov. Ptg. Office, 1945. 246 pp. Price, \$4.00.
- HEALTH AND EMPLOYMENT. A Study of Public Assistance Clients Attending Out-Patients Department Clinics. By Myra E. Shimberg, Ph.D. New York: National Council on Rehabilitation, 1946. 109 pp. Price, \$2.50.
- MEDICAL SERVICES BY GOVERNMENT. By Bernhard J. Stern, Ph.D. New York: Commonwealth Fund, 1946. 208 pp. Price, \$1.50.
- THE MODERN ATTACK ON TUBERCULOSIS. By Henry D. Chadwick, M.D., and Alton S. Pope, M.D. (rev. ed.) New York: The Commonwealth Fund, 1946. 134 pp. Price, \$1.00.
- MODERN MANAGEMENT IN CLINICAL MEDICINE. By F. Kenneth Albrecht, M.D. Baltimore: Williams & Wilkins, 1946. 1238 pp. Price, \$10.00.
- NATIONAL SOCIETY FOR THE STUDY OF EDUCATION. Forty-fifth Yearbook, Part I. Edited by Nelson B. Henry. Chicago: Univ. of Chicago Press, 1946. 338 pp. Price, \$2.25.
- THE PRINCIPLES AND PRACTICE OF TROPICAL MEDICINE. By L. Everard Napier. New York: Macmillan, 1946. 917 pp. Price, \$11.00.
- RESEARCH AND REGIONAL WELFARE. Papers Presented at a Conference on Research at the University of North Carolina at Chapel Hill, May 9, 10, 11, 1945. Edited by Robert E. Coker. Chapel Hill, N. C.: Univ. of North Carolina Press, 1946. 229 pp. Price, \$3.00.
- SOLO OR SYMPHONY. Medical Administration Service, Inc. New York: Medical Administration Service, Inc., 1946. 44 pp. Price \$25.
- STUDIES IN SCIENCE. Edited by W. C. Coker. Chapel Hill, N. C.: Univ. of North Carolina Press, 1946. 375 pp. Price, \$3.00.
- SWIMMING POOL DATA AND REFERENCE ANNUAL (14th Ed.). By Beach & Pool, Inc., New York: Hofiman-Harris, Inc., 1946. 134 pp. Price, \$3.00.
- THE UNIVERSITY AT THE CROSSROADS. By Henry E. Sigerist, M.D., D.Litt., LL.D. New York: Henry Schuman, 1946. 162 pp. Price. \$2.75.

## ASSOCIATION NEWS

SEVENTY-FOURTH ANNUAL MEETING  
AMERICAN PUBLIC HEALTH ASSOCIATION  
CLEVELAND, OHIO — NOVEMBER 12-14

### ORGANIZATION OF CLEVELAND LOCAL COMMITTEE

Harold J. Knapp, M.D., Commissioner of Health of Cleveland, and General Chairman of the Local Committee for the Association's 74th Annual Meeting, November 12-14, announces the following appointments to the Local Committee:

*Finance Committee*

Dean Halliday, *Chairman*

Mr. Halliday will also function as co-chairman of the general Local Committee

*Publicity Committee*

Frank Ryan, *Chairman*

*Meeting Rooms Committee*

Virginia Wing, *Chairman*

H. G. Dyktor, *Co-chairman*

*Registration Committee*

Dr. Charles F. McKhann, *Chairman*

*State Membership Committee*

Dr. Roger Heering, *Chairman*

Dr. Heering will also be designated as co-chairman of the general Local Committee

*Local Membership Committee*

Dr. Robert H. Bishop, *Chairman*

*Local Scientific Exhibits Committee*

Dr. Bruno Gebhard, *Chairman*

Dr. Robert N. Hoyt, *Co-chairman*

*Scientific Trips Committee*

Howard Green, *Chairman*

E. B. Buchanan, *Co-chairman*

*Entertainment Committee*

Mrs. David K. Ford, *Chairman*

E. L. Worthington, *Co-chairman*

The Preliminary Program of the Scientific Sessions for the 74th Annual Meeting will be published in the September *Journal*. Railroad rates and hotel information will appear in the August issue.

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

- Lyman T. Cox, M.D., 209 S. Campbell, El Paso, Tex., Director, El Paso City-County Health Dept.
- Dr. Arturo Congote-Escobar, Carrera 15, 21-65, Armenia Dept. Caldas, Colombia, S. A., Director Centro de Higiene
- John A. Degen, Jr., M.D., M.P.H., 411 Herald Bldg., Syracuse, N. Y., Asst. District Health Officer, State Dept. of Health
- James A. Grider, Jr., M.D., 151 U. S. Court House, El Paso, Tex., Chief of Office, Pan-American Sanitary Bureau
- Charlotte M. Horner, M.D., D.P.H., Campbellford, Ontario, Canada, Asst. Medical Officer of Health, Northumberland-Durham Health Unit
- George E. Lacy, M.D., 1401 N.W. 7th Ave., Miami, Fla., Director Dade County Venereal Disease Control Program
- Clarence W. MacCharles, M.D., D.P.H., Northumberland-Durham Health Unit, Cobourg, Ontario, Canada, Director and Senior Medical Officer of Health
- Cameron F. McRae, M.D., Health Dept., Norton, Va., Health Officer, Russell-Wise Health District
- Octavio S. Mondragon, M.D., Avenida del Castillo 215, Lomas de Chapultepec, Mexico City, Mexico, Undersecretary of Public Health and Welfare
- Dale E. Scholz, M.D., Dept. of Health, Middletown, Conn., Health Officer

### *Laboratory Section*

- D. A. Anderson, Ph.D., Brigham Young Univ., Bact. Dept., Provo, Utah, Assoc. Prof. of Bacteriology
- James M. Beebe, Ph.D., University of Arizona, Dept. of Bacteriology, Tucson, Ariz., Teacher, Bacteriology and Laboratory Methods
- M. S. A. Campbell, 1098 W. Michigan St., Indianapolis 7, Ind., Bacteriologist, State Board of Health
- Margaret S. Coates, B.S., 5912 14th St., N.W., Apt. 201, Washington 11, D. C., Research Laboratory Worker
- Lemuel W. Diggs, M.D., 93rd and Euclid, Cleveland, Ohio, Cleveland Clinic Foundation
- Nicholas D. Duffett, Ph.D., 7045 Cleatha, St. Louis 9, Mo., Principal Bacteriologist, St. Louis Health Division Laboratory

- Elsie P. Foxhall, 1907 Hanover Ave., Richmond 20, Va., Serologist, State Health Dept.
- Frances A. Hamler, 1268 Van Buren, Topeka, Kans., Bacteriologist, State Board of Health
- Alice R. Keiton, 2712 Nueces, Apt. B, Austin 21, Tex., Asst. Bacteriologist, State Health Dept.
- Luella K. Ketcheson, B.S., 4541 16th Ave., N.E., Seattle 5, Wash., Junior Bacteriologist, State Dept. of Health
- Aaron Learner, M.D., 115 Cahill Lane, Oak Ridge, Tenn., Chief of Laboratory Service, Oak Ridge Hospital
- Jean McGregor, B.A., Pierre, S. D., Junior Bacteriologist, Division of Laboratories, State Public Health Dept.
- Ernest M. Noblitt, M.S.P.H., Tom Green County Health Unit, San Angelo, Tex., Laboratory Director
- Morris Pollard, D.V.M., Univ. of Texas, Medical School, Galveston, Tex., Asst. Prof. of Public Health
- Robert C. Pope, Box 903, Dallas, Tex., Chemist, Pope Testing Laboratories
- Bjorn Sigurdsson, M.D., Fjolugata 23, Reykjavik, Iceland, Director, Institute for Experimental Pathology, University of Iceland
- George G. Smith, B.A., 501 N.E. 15, Oklahoma City, Okla., Bacteriologist, State Health Dept.
- Pauline I. Thomas, 1401 Monaco Parkway, Denver, Colo., Bacteriologist, State Board of Health
- Guy R. Vitagliano, M.S., 4905 Alcott Ave., St. Louis 20, Mo., Assoc. Bacteriologist, Dept. of Public Welfare Laboratory

### *Vital Statistics Section*

- Julia F. Heuck, M.A., 2126 Connecticut Ave., N.W., Washington 8, D. C., Director of Research, District of Columbia Tuberculosis Assn.
- Nancy G. Katzki, B.A., 5104 S.E. 39th Ave., Portland 2, Ore., Statistician, Division of Tuberculosis Control, State Board of Health
- Elizabeth M. Macfarlane, Calhoun County Health Dept., Battle Creek, Mich., Statistician

### *Engineering Section*

- Ralph O. Archer, B.S., 425 North Water, Gallatin, Tenn., Sanitarian, Sumner County Health Dept.



Leslie R. Bacon, Ph.D., Wyandotte Chemicals Corp., Wyandotte, Mich., Research Supervisor

Demetrio Ganon-Corcho, No. 5, Castelar St., Ciudad Trujillo, Dominican Republic, Engineer and Sub-Director, Division of Malariology, Health Dept., Dominican Republic

H. Clifford Goslee, 256 Palm St., Hartford, Conn., Exec. Asst. to Commissioner, State Dairy and Food Commission

James T. Hart, Jr., B.S., 3 Franklin Place, Morris Plains, N. J., Supt., Morris County Mosquito Extermination Commission

Hugo E. Kunhardt-Gonzalez, 54 Perkins Hall, Harvard Univ., Cambridge, Mass., Student  
Otto Paganini, Hidalgo County Health Unit, Edinburg, Tex., Sanitary Engineer

Irvin B. Tapley, Box 202, Idabel, Okla., Inspector of Residual Spraying, MCWA, USPHS

Ariel A. Thomas, M.S., Dept. of Civil and Sanitary Engineering, Massachusetts Institute of Technology, Cambridge 39, Mass., Instructor of Sanitary Engineer

Walter H. Watanabe, B.S., P. O. Box 511, Wailuku, Maui, Hawaii, Sanitary Inspector, Bureau of Sanitation

#### *Industrial Hygiene Section*

Gerald M. Kilcullen, 1523 Unionport Rd., New York 62, N. Y., A.U.S., 1941-1945

Richard L. Kuehner, Ph.D., R.D. 2, York, Pa., Research Engineer, York, Corp.

Robert Soles, A.B., 417 Adams, Fairmont, W. Va., Physical Therapist

#### *Food and Nutrition Section*

Mary E. W. Barduhn, M.S., 1846 Spruce St., Berkeley 4, Calif., Nutritionist, San Francisco Dept. of Public Health

Harry D. Fein, M.D., 114 E. 61st St., New York 21, N. Y., Physician, Nutrition Clinic, Lower East Side Health Center, Dept. of Health

Rachel H. Ferguson, State Health Dept., Charleston, W. Va., Nutrition Consultant

Lois F. Hallman, A.B., 3665 38th St., N.W., Washington 16, D. C., Biochemist, U. S. Dept. of Agriculture

Edith Lawrence, B.S., Extension Service, College Station, Tex., Food Preparation Specialist

Marguerite J. Queneau, M.A., 76 State St., State Health Dept., Albany, N. Y., Nutritionist

Gertrude M. Speck, B.S., 1930 Third St., East Moline, Ill., Consultant Dietitian, Div. of Maternal and Child Hygiene, State Dept. of Public Health

Margery Vaughn, 1321 S. Arlington Ridge Rd., Arlington, Va., Deputy Director, Nutrition Service, American Red Cross

#### *Maternal and Child Health Section*

Noah Barysh, M.D., 15 Park Ave., New York. N. Y., Physician, Bureau of Child Hygiene, New York City Health Dept.

Kurt Bluchdorn, M.D., 352 West 110th St., New York 25, N. Y., Medical Inspector, Bureau of Child Hygiene, New York City Health Dept.

Thomas M. Boulware, M.D., 2501 N. 16th Ave., Birmingham, Ala., Consultant in Obstetrics, Jefferson County Health Dept.

Reba M. Butler, R.N., 703 California State Bldg., Los Angeles 12, Calif., Hospital Nursing Consultant, State Dept. of Public Health

Ella K. Cooper, M.D., 3406 73rd St., Jackson Heights, N. Y., Medical Inspector, New York City Dept. of Health

Michael A. Cuozzo, M.D., 140 Eighth Ave., Brooklyn 15, N. Y., Medical Inspector, Pediatrics, New York City Dept. of Health  
Auguste Falkenstein, M.D., 556 West 140th St., New York 31, N. Y., Physician, Child Health Station, New York City Dept. of Health

Georgeanna H. Greer, M.D., 1300 A. Norwalk Lane, Austin, Tex., Pediatric Consultant, School Health Services, State Health Dept.

H. Neumaun, M.D., 225-08 Linden Blvd., St. Albans, N. Y., Physician, New York City Health Dept.

Margery Peabody, 16 Hartwell St., VNA, Fitchburg, Mass., Supt., Fitchburg Visiting Nurse Assn.

#### *Public Health Education Section*

Herman Saavedra-Bayer, M.D., Univ. of Calif., International House, Berkeley, Calif., Chief of Public Health Education Dept., Inter-American Cooperative Public Health Service, Bogota, Colombia

Nellie A. Blake, M.S.P.H., 1135 E. Catherine St., Ann Arbor, Mich., Educational Director, Michigan Rapid Treatment Center

Anthony E. Bott, D.V.M., Box 87, East St. Louis, Ill., Secretary-Treasurer, Corn Belt Laboratories, Inc.

Rhoda Cobin, R.N., 350 Ocean Ave., New London, Conn., Public Health Instructor, Joseph Lawrence School of Nursing

S. W. Evans, M.A., P. O. Box 5755, Bethesda 14, Md., Health Education Specialist, Venereal Disease Division, U. S. Public Health Service

Edith M. Gereau, M.P.H., Charlotte Amalie, St. Thomas, Virgin Islands, Health Coördinator, Dept. of Health

Paul B. Gillen, M.Ed., 520 W. 122nd St., New York 27, N. Y., Instructor in Public Health and Preventive Medicine, Cornell University Medical College

Eleanor V. Green, M.A., 105 E. 22nd St., New York 10, N. Y., Field Advisor, State Charities Aid Assn.

Cecyl N. Covelsrud, B.A., Fresno State College, Fresno, Calif., Supervisor, Community Health Education Project

Leonard F. Janes, M.Ed., Bristol County Health Assn., 17 County Court House, Taunton, Mass., Health Education Director

W. Harvey Jordan, 2719 N.W. 24th St., Miami, Fla., Senior Sanitary Officer, Dade County Health Unit

Catherine C. Meyering, B.A., 1385 Nicholson St., N.W., Washington 11, D. C., Director, Rehabilitation Service, D. C. Tuberculosis Assn.

Sister Mary Arnolda Miller, R.N., 355 Ridge Ave., Evanston, Ill., St. Francis Hospital

Roscoe K. Miller, M.A., 1022 S.W. 11th Ave., Portland 5, Ore., Health Education Consultant, State Board of Health

Charles J. Miramon, B.A., 2630 Bell, New Orleans, La., Acting Sanitation Supervisor, City Dept. of Health

Russell C. Nye, M.B.A., Parkland Hospital, Maple and Oaklawn, Dallas 4, Tex., Hospital Administrator

Donald E. Pratt, A.B., 411 N. 10th St., St. Louis, Mo., Exec. Secy., Missouri Tuberculosis Assn.

Amy E. Rogers, B.S., 52 Main St., Salamanca, N. Y., Exec. Secy., Cattaraugus County Tuberculosis and Public Health Assn.

Howard A. Rusk, M.D., New York Times, New York 18, N. Y., Assoc. Editor

Victor J. St. Blanc, Jr., A.B., 680 Oak St., Harahan, La., Sanitation Inspector, New Orleans Health Dept.

Howard J. Stroud, 32 Andre St., S.W., Grand Rapids, Mich., Student Assistant, Dept. of Environmental Health, School of Public Health, Univ. of Michigan

Richard E. Thurber, 352 East 89th St., New York 28, N. Y., Orderly, Bureau of Social Hygiene, New York City Health Dept.

Fentem Utley, B.S., Arkansas State Board of Health, Little Rock, Ark., Health Educator

Josef J. Weisskopf, M.D., 5105 8th St., N.W., Washington 11, D. C., Medical Consultant, Medical Supply Division, UNRRA

Waldo W. Wilmore, M.A., State House, Board of Health, Topeka, Kans., Personnel Officer

Catherine A. Worthingham, M.A., 120 Broadway, N.F. for I.P., New York 5, N. Y., Director of Technical Education, National Foundation for Infantile Paralysis

### Public Health Nursing Section

Gilda M. Albert, R.N., 69 Park St., Lewiston, Me., Exec. Secy., Lewiston-Auburn Tuberculosis Assn.

Beulah K. Ankenmann, R.N., 510 First National Bldg., Ann Arbor, Mich., Exec. Director, Public Health Nursing Assn.

Ingeborg Bemberg, B.S. in N., 614 Davis St., Evanston, Ill., Supervisor, Evanston Visiting Nurse Assn.

Helen L. Brown, 533 Second St., Corte Madera, Calif., Nursing Field Representative for Central California, American Red Cross

Mary Lee Brown, R.N., Meharry Medical College, Nashville, Tenn., Director of Public Health Nursing

Ermah L. Damewood, R.N., P. O. Box 2583, Charleston 29, W. Va., Public Health Nurse, Kanawha County Health Dept.

Elizabeth A. Delavan, R.N., 2016 Washington Ave., Racine, Wis., Director of Nursing, Racine Health Dept.

Rose B. Dolan, c/o Mrs. Toland, Wynnewood, Pa., Director of Nursing and Social Work, American Committee for Civil Affairs

Florence O. Eby, R.N., B.S., Box 960, Anchorage, Alaska, Supervisory Nurse for Interior, Territorial Dept. of Health

Amy M. Erickson, R.N., M.A., 132 East 45th St., New York 17, N. Y., Instructor, New York University

Virginia R. Field, R.N., Box 1056, Bismarck, N. D., Asst. Director of Public Health Nursing, State Dept. of Health

Agnes Fuller, B.S., 348 W. 23rd St., New York, N. Y., Asst. Director, National Organization for Public Health Nursing

Florence A. Gates, 47 Washington Ave., South Nyack, N. Y., School Nurse

Beryl D. Huffman, R.N., 501 Taylor, Topeka, Kans., Staff Nurse and Advisor, Topeka City-Shawnee County Health Dept.

Jean H. LeFors, 801 Lindenwood, Topeka, Kans., Staff Nurse, Topeka City-Shawnee County Health Dept.

Mary S. Lothes, R.N., 119 Chestnut, Elkins, W. Va., Venereal Disease Clinic Nurse and Field Nurse, West Virginia Tuberculosis and Health Assn.

Helen M. Marcy, B.A., Box 1206, Lakeview, Ore., Lake County Public Health Nurse

Ariel A. Moore, R.N., B.S., 1020 Santa Fe Bldg., Dallas, Tex., Asst. Nurse Officer (R), U. S. Public Health Service

Elizabeth S. Newton, B.S., 1900 W. Polk St., Chicago 12, Ill., Director of Health, Cook County School of Nursing

Laura S. Story, M.A., 8615 Elmhurst Ave.,

Elmhurst, N. Y., District Supervising Nurse, New York City Dept. of Health  
 Margaret W. Thomas, M.A., Humboldt Bank Bldg., San Francisco, Calif., Regional Nursing Consultant. U. S. Childrens Bureau

#### *Epidemiology Section*

Capt. Alton M. Brown, USPHS, USF, China Theatre, APO 971, San Francisco, Calif., Passed Assistant Sanitarian (R), U. S. Public Health Service  
 Alejandro Principe, M.D., Sanatorio Antituberculoso, "Simon Bolivar," Caracas, Venezuela, S. A., Director, Tuberculosis Clinic, Ministry of Public Health and Social Welfare  
 Harry Rubin, 301 Dryden Rd., Ithaca, N. Y., Student, New York State Veterinary College  
 Howard B. Shookhoff, M.D., 600 West 168th St., New York 32, N. Y., Epidemiologist in Tropical Diseases, New York City Health Dept.  
 Colonel Tom F. Whayne, M.C., Office of the Surgeon General, U. S. Army, Washington, D. C., Asst. Chief, Preventive Medicine Division

#### *School Health Section*

Jacob J. Altholtz, M.D., 208 Ross St., Brooklyn 11, N. Y., School Physician, New York City Health Dept.  
 Michael A. Brescia, M.D., 40-50 Junction Blvd., Corona, N. Y., Medical Inspector, New York City Health Dept.  
 Charles A. R. Connor, M.D., 140 East 54th St., New York, N. Y., Supervising Cardiologist, New York City Health Dept.  
 Helen F. Dempster, M.A., State Dept. of Education, Salem, Ore., Supervisor of Special Health Instruction Projects (Kellogg Foundation Program)  
 Leo Falkenstein, M.D., 556 West 140th St., New York 31, N. Y., School Medical Inspector, New York City Health Dept.  
 Isabel R. Hefelfinger, 430 Washington Rd., Nevada City, Calif., Supervisor of Health, Nevada City Schools  
 Renee K. Imberman, M.D., 1786 Topping Ave., New York 57, N. Y., School Physician, New York City Health Dept.  
 Lucy Jaffe, M.D., 609 West 196th St., New York 34, N. Y., School Physician, New York City Health Dept.  
 Elizabeth G. Lovell, R.N., 52 Hunt Ave., Charleston, W. Va., Kanawha County School Nurse  
 Lucile A. Nolan, R.N., M.A., 15603 Hilliard Rd., Lakewood, Ohio, Asst. Supervisor of School Nurses, Cleveland Public Schools  
 Orpha K. Reel, R.N., 707 Bauer Ave.,

Charleston 2, W. Va., School Nurse, Kanawha County School Board

#### *Dental Health Section*

Cleveland W. Eneas, D.D.S., 1606 Meharry Blvd., Nashville, Tenn., Asst. Prof. of Oral Anatomy, Meharry Medical College  
 Donald J. Galagan, D.D.S., Dept. of Health, Troy, Ohio, Dental Surgeon, U. S. Public Health Service  
 Dr. Herbert I. Margolis, 311 Commonwealth Ave., Boston 15, Mass., Member, Council of Dental Health, Massachusetts Dental Society  
 James Nuckolls, D.D.S., The Medical Center, Univ. of California, College of Dentistry, San Francisco 22, Calif., Prof. of Operative Dentistry  
 A. H. Trithart, D.D.S., West Tenn. Regional Office, Dept. of Public Health, Jackson, Tenn., Regional Dental Officer

#### *Unaffiliated*

Frank W. Bishop, LL.D., 1735 Riggs Place, N.W., Washington, D. C., Social Science Analyst, Social Security Board  
 Sister Marie Daly, Providence Hospital, 2nd and D Sts., S.E., Washington, D. C., Administrator  
 Beulah Hamlin-Howard, R.N., Portland Open Air Sanatorium, Milwaukie, Ore., Tuberculosis Specialist  
 Isabelle Mugnier, R.N., 715 St. Charles St., New Orleans 12, La., Food and Milk Sanitarian, New Orleans Health Dept.  
 Douglas W. Ritchie, M.D., Rancho Los Amigos, Hondo, Calif., Medical Director  
 Estelle Shelton, R.N., 1627 Melpomene St., New Orleans 13, La., Food and Milk Sanitarian, New Orleans Health Dept.  
 Helen E. Weaver, R.N., City Hall, Room 606, Buffalo, N. Y., Student, Columbia Univ., School of Public Health

#### **A.P.H.A. MEMBERSHIP CROSSES 10,000 TOTAL**

On May 17, the American Public Health Association membership list passed the 10,000 mark and the ten thousandth member was Victor St. Blanc, sanitation inspector with the New Orleans Health Department. Mr. St. Blanc is a graduate of the Louisiana State University and of the Sanitarian School, St. Mary's Parish Health Unit. He served for some time with the Louisiana State Health Department be-

fore beginning his present position in September, 1945.

Mr. St. Blanc is one of four staff members of the Bureau of Sanitation in the New Orleans Health Department whose conscientious service was recognized by their chief, Charles J. Ball, the director of the Bureau of Sanitation, who has generously made available memberships in the American Public Health Association as awards.

#### A.P.H.A. COUNSELING AND PLACEMENT SERVICE EXPANDS

As of June 1 the report of F. W. Racker, M.D., M.P.H., Personnel Consultant for the Vocational Counseling and Placement Service, showed that a total of 182 persons were registered for all positions, the largest number in the fields of health education, laboratory workers, and medical administration. The service as of the same date listed 560 vacant positions among 161 employers. The largest numbers of positions were in the field of medical administration, epidemiology, and clinical service, where 304 vacancies were on record. Forty-nine sanitarians were sought and 54 sanitary engineers.

Along with a steadily increasing number of positions has come a slowly increasing number of registrants, but in total less than a third of those required to fill listed positions. Especially encouraging is a substantial increase in the number of positions open for sanitary engineers where such a substantial deficit of personnel has been shown. According to the report on *Local Health Units for the Nation*, recently published by the Commonwealth Fund on behalf of the American Public Health Association, a deficit of more than 1,000 sanitary and public health engineers was apparent in local health service alone in order to provide a basic grade of supervision for the environment.

The Vocational Counseling and Placement Service is operated by the Ameri-

can Public Health Association with the active coöperation of the U. S. Public Health Service. The present project it is hoped can be continued after the end of the current federal year on June 30, and prospective employers and employees are encouraged to register with the service, which may be addressed in care of the Association at 1790 Broadway, New York 19, N. Y.

#### DECEASED MEMBERS AND FELLOWS

##### Fellows

William W. Brooke, M.D., Bayonne, N. J.,  
Elected Member 1919, Elected Fellow 1925.  
Health Officers Section

Thomas J. Duffield, New York, N. Y., Elected  
Member 1926, Elected Fellow 1935, Vital  
Statistics Section

A. C. Hunter, Ph.D., Washington, D. C.,  
Elected Member 1919, Elected Fellow 1930,  
Food and Nutrition Section

Francis D. Patterson, M.D., Philadelphia, Pa.,  
Elected Member 1913, Charter Fellow, In-  
dustrial Hygiene Section

##### Members

Louis M. Allyn, M.D., Mystic, Conn., Elected  
Member 1921, Unaffiliated

Fred H. Jennings, Watertown, N. Y.,  
Elected Member 1908, Laboratory Section

Jose D. Moral, M.D., Ph.D., Guayaquil,  
Ecuador, Elected Member 1926, Laboratory  
Section

George W. Ross, M.D., Port Ewen, N. Y.,  
Elected Member 1935, Health Officers  
Section

Margaret I. Stanford, R.N., Charleston, S. C.,  
Elected Member 1928, Public Health Nur-  
sing Section

Alexander L. Thomson, Fishaw, Scotland,  
Elected Member 1930, Engineering Section

#### CORRECTION

In the article appearing in the May Journal entitled, "Acute Respiratory Disease Among New Recruits," by the Commission on Acute Respiratory Diseases, a correction should be made: the first line on page 442 should include the word "unseasoned" instead of "seasoned."

AUTHORS

JOINT COMMITTEE ON HOUSING  
AND HEALTH

F. Stuart Chapin, Ph.D., Chairman and Director of the Department of Sociology, University of Minnesota, has agreed to serve as a member of the Joint Committee on Housing and Health of the National Association of Housing Officials and the Association.

CLOSING DATE FOR ACCEPTING  
FELLOWSHIP APPLICATIONS

September 1 will be the closing date for accepting applications for Fellowship to be considered at the 1946 Annual Meeting in November. Members who are eligible and are interested in becoming Fellows are urged to submit their applications, completely filled in

and sponsored, as far in advance of this date as possible.

NEW MEMBERS OF THE SUBCOMMITTEE  
ON HYGIENE OF HOUSING

The following have accepted membership on the Subcommittee on the Hygiene of Housing:

F. Carlyle Roberts, Jr.  
Sanitary Engineer  
U. S. Public Health Service  
Washington, D. C.

Abner D. Silverman  
Deputy Assistant Commissioner for Project Management  
Federal Public Housing Authority  
Washington, D. C.

Henry Wright, Managing Editor  
*Architectural Forum*  
Empire State Building  
New York, New York

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in June Journal)

**Wanted:** Medical Social Worker for challenging position. Combination case work and community organization in voluntary health agency, Denver, Colo. No travel. Write Box K, Employment Service, A.P.H.A.

**Wanted:** Executive Secretary for voluntary health agency in urban New England community. Duties: program planning, community organization, fund raising. Master's degree and experience required. Salary \$3,500-\$4,000. Box S, Employment Service, APHA.

**Wanted:** Junior Sanitarian for Department of Health, Jackson, Mich., with degree in an applied science, preferably specialization in public health courses or graduation from college or university of recognized standing and at least 1 year of successful experience in sanitation and public health work, or any equivalent combination of education and experience. Salary range \$2,350-\$2,560 per year. Apply Civil Service Commission, City Hall, Jackson, Mich.

**Wanted:** Director, Bureau of Vital Statistics. Must have college degree with courses in statistics and at least 4 years' experience in vital statistics work. Preference given to M.D. or Ph.D. in statistics. Write for information to Merit System Supervisor, Florida State Board of Health and Crippled Children's Commission, 201 Professional Bldg., Gainesville, Fla.

**Wanted:** Health Officer, Champaign-Urbana Public Health District, Ill. Home of University of Illinois. Salary \$5,000 plus \$600 travel. Write State Health Officer, Springfield, Ill., for information.

**Epidemiologist** wanted who will also serve as director of Division of Acute Communicable Diseases Control of Department of Public Health, Seattle, Wash. Beginning salary \$6,000 plus reimbursement for necessary travel. Apply to Emil E. Palmquist, M.D., Director of Public Health, 300 Public Safety Bldg., Seattle 4, Wash.

**Wanted:** Physician for director of Division of Maternal and Child Health Service of Department of Public Health, City of Seattle. Applicant must have had specialized training in pediatrics or public health and experience also preferred. Beginning salary \$6,000 plus reimbursement for necessary travel. Apply to Emil E. Palmquist, M.D., Director of Public Health, 300 Public Safety Bldg., Seattle 4, Wash.

**Wanted:** Public health nurses for generalized nursing program. Salary range \$210-\$240 per month. Under civil service 40 hour week, vacation and sick leave privileges. Address Director of Public Health Nursing, City of Seattle, 504 County-City Bldg., Seattle 4, Wash.

**Wanted:** Well trained, full-time health officer to direct generalized program of Chippewa Co., Mich. Population 26,000, central office Sault Ste. Marie, population 16,000. County will be combined within year with two adjoining sparsely settled counties, increasing total population to 40,000. Beginning salary \$6,000 plus adequate travel allowance. Salary increase at time of merger. Write Russell E. Pleune, M.D., Director, Northern Peninsula Office, Michigan Dept. of Health, Escanaba, Mich.

Resort areas of Michigan need qualified public health nurses to help develop expanding programs of local health departments. Personnel policies written to offer staff members opportunities to enjoy water and woodland sports and outdoor life year round. Positions open immediately for 10 staff nurses at salary range of \$2,100-\$2,220, 2 senior nurses at \$2,400, and 2 supervising nurses at \$2,700 to \$3,000. Write for personnel form to Director, Northern Peninsula Office, Michigan Dept. of Health, Escanaba, Mich.

**Wanted:** Public Health Nurse, age 22 to 45, salary \$200 per month and maintenance. Must furnish own car. Ideal working and living conditions. Contact Dr. Paul D. Crimm, Boehne Tuberculosis Hospital, Evansville 12, Ind.

**Wanted:** Physician to act as health officer in large local department of health in State of Washington. Salary range \$5,280 to \$6,300, entrance varying with education and experience of candidate. For full details write Dr. Arthur L. Ringle, State Director of Health, Seattle, Smith Tower, Wash.

**Wanted:** Experienced sanitarians with college degree to serve in local health departments. Salary range \$2,400 to \$2,880 entrance, varying with education and experience of candidate. Opportunities of advancement to Senior Sanitarian with salary range \$2,760 to \$3,360. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle, Wash.

Hawaii Board of Health wants 1 psychiatrist to direct bureau of mental hygiene. Salary \$645 to \$728.33 plus \$45.00 bonus. Certification by the American Board of Psychiatry and Neurology or sufficient training and experience to be eligible for such certification required; 1 Pathologist to direct Bureau of Laboratories. Salary \$520 to \$620 plus \$45 bonus. Must have 3 years' experience in pathology of which 2 years shall include administrative responsibility for work of recognized laboratory engaged in diagnosis and control of human diseases, graduation from medical school of recognized standing and 2 years' specialized training in pathology; 1 Pediatrician to assist in direction of programs of maternal and child health and of crippled children. Salary \$520 to \$620 plus \$45 bonus. Must be certified by American Board of Pediatrics or have sufficient training and experience to be eligible for such certification. Write to Board of Health, Territory of Hawaii. P. O. Box 3378, Honolulu 1, T. H. Use 15¢ Clipper Mail.

Territorial Department of Health, Juneau, Alaska, wants public health staff nurses. Minimum salary \$245 Southeastern, \$281.75 Interior. Minimum qualifications: year of public health in school of nursing approved by NOPHN and 2 years' experience, one of which has been under qualified supervision, preferably in VNA or rural public health. Vacation 1 month, 14 days sick leave, 38 hour week. Apply directly to Director, Division of Public Health Nursing, Box 1931, Juneau, Alaska.

**Wanted:** Graduate in chemistry, chemical engineering or sanitary chemistry with experience in sewage treatment plant laboratory or similar field for position as chemist. Some experience or training in bacteriological work also desirable. Starting salary \$3,200. Newly organized research project, Eastern U. S. Apply Box R, Employment Service, APHA.

**Wanted:** Physicians for health officer positions in county and district health departments in Oklahoma. Salary range according to public health training and experience \$4,800 to \$6,600 plus travel. Beginning salary with no previous training or experience \$4,200 to \$4,800 plus travel. Address Commissioner of Health, Oklahoma State Dept. of Health, Oklahoma City 5, Okla.

**Health Directors.** Two qualified physicians to direct public health programs of counties coöperating with W. K. Kellogg Foundation in Southwestern Michigan. These counties are part of a field training area of Michigan Department of Health. Maximum salary \$7,200 plus travel allowance. Write M. R. Kinde, M.D., Director, Division of Public Health, W. K. Kellogg Foundation, Battle Creek, Mich.

**Public Health Engineers.** Two public health engineers to direct environmental health programs in counties coöperating with W. K. Kellogg Foundation in Southwestern Michigan. These counties are part of a field training area of Michigan Department of Health. Maximum salary \$3,600 plus travel allowance. Write M. R. Kinde, M.D., Director, Division of Public Health, W. K. Kellogg Foundation, Battle Creek, Mich.

**Wanted:** Physicians trained in school of public health and with public health experience for key positions in Latin-American Republics. For particulars communicate with Personnel Director, Office of Inter-American Affairs, 499 Pennsylvania Ave., N.W., Washington 25, D. C., sending brief outline of qualifications.

**Wisconsin Needs District Health Officers.** Salary \$4,320-\$4,920 and travel expenses. Write State Board of Health, Madison 2, Wis., giving training, age and experience.

#### New York State Department of Health Offers Scholarships

Tuition for two semesters' study in public health nursing at approved university and monthly maintenance of \$100 for graduate nurses qualifying. Must be eligible to register in New York State. After preparation there is a two year field obligation to serve as rural public health nurse in upstate New York. Apply to Katherine E. Payne, R.N., New York State Department of Health, Albany 1, N. Y.

## NEWS FROM THE FIELD

### WORLD HEALTH ORGANIZATION A REALITY

Plans for an international health conference under the auspices of the Economic and Social Council of the United Nations were sketched briefly for readers in the April (p. 426) and May (p. 576) *Journals*.

The first Plenary Session of the International Health Conference was held in New York on June 19. To it were invited delegates of the 51 United Nations and observers from 15 non-member countries, from the three Allied Control Authorities of Germany, Japan, and Southern Korea, and from 10 international organizations. Most of the delegations included Delegates, Advisers, and Technical Experts.

The Conference was opened by the Chairman of the Economic and Social Council who outlined the steps leading up to the meeting of the Technical Preparatory Committee for the International Health Conference from the time the word "health" was inserted in the San Francisco Charter on the proposal of the delegation of Brazil and the joint declaration by the delegations of Brazil and China was submitted on the calling of an international conference for the purpose of establishing an international health organization.

The Representative of the United States on the Economic and Social Council, the Honorable John G. Winant, presented a message from President Truman, which read in part:

"It is of great significance that the first international conference to meet at the call of the Economic and Social Council should have for its object the improvement of health, for this indicates the intention of the Council to grapple immediately with basic problems whose solution is essential to the

welfare and happiness of mankind. . . . Modern transportation . . . makes it necessary to develop strong health services in every country which must be coordinated through international action. . . . The right to adequate medical care and the opportunity to achieve and enjoy good health should be available to all people. For this objective I can assure you the interest and the support of the United States."

The Secretary-General of the United Nations, Mr. Tryvge Lie, welcomed the delegates and the Assistant Secretary-General of the United Nations in charge of the Department of Social Affairs, Professor Henri Laugier, indicated the tasks before the Conference as follows:

"Your Conference has one precise aim and one only. This aim is to establish the constitution, the rules, the structure, the practical functioning and machinery of the World Health Organization of the United Nations. . . . A day will come when you will have to concentrate on technical problems, to set up working programs, with all your scientific knowledge, with all the devoted care which you give to your own medical disciplines. But today I ask you to keep in mind through each step of your work, the fact that your Conference is a constituent Conference and that if you have established a satisfactory constitution for the new organization, your mission will have been fulfilled. You have, as a valuable guide in your labors, the Report of the Preparatory Committee in Paris, and your draft will be submitted to the Assembly. I express the feeling of all who set great hopes in the Organization you are about to establish, when I voice the wish that the framework to be set up may be



neither too vague nor too rigid and may allow in the far or nearer future all developments made necessary by the unpredictable progress of science and the increasing authority and responsibility of the United Nations."

The Report of the Preparatory Committee referred to represents the Committee's views as to the general principles which should govern the constitution of the World Health Organization. It states the aims and objectives of the World Health Organization as:

1. To achieve the highest possible state of physical and mental health for all peoples.
2. To prevent the occurrence and control the spread of disease.
3. To stimulate the development and improvement of health services, both preventive and curative.
4. To provide information, counsel, and assistance in the field of health and medical care.
5. To achieve the highest possible level of education and knowledge pertaining to health.
6. To unite for effective action the scientific and professional groups that contribute to the advancement of health.
7. To contribute to the harmony of human relations.

Dr. Thomas Parran was elected President of the International Health Conference which will be in session in New York for several weeks.

*American Delegation to the International Health Conference, June 1946*

The persons appointed by President Truman to represent the United States of America at the meetings of the International Health Conference convened to set up the Health Organization of the United Nations were announced on June 12 as follows:

Thomas Parran, M.D., Surgeon General, U. S. Public Health Service, *Chairman*  
 Martha M. Eliot, M.D., Assistant Chief, U. S. Children's Bureau, *Vice Chairman*  
 Frank G. Boudreau, M.D., Executive Director, Milbank Memorial Fund, New York  
 Dr. Edwin B. Fred, President, University of Wisconsin, member National Advisory Health Council

James E. Paullin, M.D., Atlanta, Ga.  
 Durward V. Sandifer, Chief of the Division of International Organization Affairs, U. S. Department of State  
 Secretary-General of the Delegation, Otis E. Mulliken, Chief of the Division of International Labor, Social and Health Affairs, U. S. Department of State

*Advisers to the Delegation:*

*Chief Technical Adviser*, L. L. Williams, Jr., Chief of the Health Branch, Division of International Labor, Social and Health Affairs, U. S. Department of State

*Advisers:*

Ward P. Allen, Regional Problems Branch, Division of International Organization Affairs, U. S. Department of State  
 Howard B. Calderwood, Office of International Health Relations, U. S. Public Health Service  
 James A. Doull, M.D., Director, Office of International Health Relations, U. S. Public Health Service  
 Robert P. Fischelis, Secretary American Pharmaceutical Association  
 H. Van Zile Hyde, M.D., Assistant Chief Health Branch, Division of International Labor, Social and Health Affairs, U. S. Department of State  
 Major General George F. Lull, U.S.A. Ret., General Manager, American Medical Association  
 John Maktos, Division International Organization Affairs, U. S. Department of State  
 Marcia Maylotte, Division International Organization Affairs, U. S. Department of State  
 Albin Roseman, Acting Chief, International Activities Branch, U. S. Bureau of the Budget  
 Michael B. Shimkin, M.D., Assistant Director, Office of International Health Relations, U. S. Public Health Service  
 Mary Switzer, Assistant to the Federal Security Administrator  
 Elmira B. Wickenden, Executive Secretary, National Nursing Council  
 Abel Wolman, Dr. Eng., Professor of Sanitary Engineering, Johns Hopkins University, Chairman of the Executive Board, American Public Health Association

*Executive Secretary to the Delegation*, Richard S. Wheeler, Assistant Director Division of International Conferences, U. S. Department of State

*Special Assistant to the Chairman*, Jean Hend-

erson, Chief of the Office of Health Information, U. S. Public Health Service  
*Special Assistant to the Secretary General,*  
Frances M. Wilson, Division of International Labor, Social and Health Affairs, U. S. Department of State  
*Administrative Assistant,* Dorothy H. King, Division of International Conferences, U. S. Department of State

#### PRESIDENT'S REORGANIZATION PLANS

On July 16, barring concurrent resolutions of disapproval by both Houses of Congress, the President's reorganization plan for the Federal Security Agency announced on May 16, will go into effect. The plan transfers to the Federal Security Administrator the functions of the Children's Bureau, with the sole exception of those relating to child labor under the Fair Labor Standards Act. It provides for the continuation of the Children's Bureau within the Federal Security Agency, "but is flexible enough to enable the Administrator to gear in the Bureau's programs effectively with other activities of the Agency. The transfer of the Children's Bureau will not only close a serious gap in the work of the Agency but it will strengthen the child care programs by bringing them into closer association with the health, welfare, and educational activities with which they are inextricably bound up."

Included in the plan also is a transfer of the vital statistics functions of the Census Bureau to the Federal Security Agency, to be performed through the Public Health Service or other facilities of the Agency. In this connection it is pointed out that, in every state but one, vital statistics is a function of the state health department and that the work in the states is financed in part by federal aid administered by the Public Health Service. "This transfer will make for a better correlation of vital statistics with morbidity statistics which are already handled by the Public Health Service. In addition, the Federal Security Agency depends on vital

statistics and records in the operation of its program."

The plan further abolishes the Social Security Board, transferring its functions to the Administrator, who is provided with two new assistant administrators.

In announcing the plan the President also recommended to Congress that legislation be enacted making the Federal Security Agency an Executive department. "The size and scope of the Federal Security Agency and the importance of its functions clearly call for departmental status and a permanent place in the President's Cabinet. In number of personnel and volume of expenditures the Agency exceeds several of the existing departments. Much more important, the fundamental character of its functions—education, health, welfare, social insurance—and their significance for the future of the country demand for it the highest level of administrative leadership and a voice in the central councils of the Executive Branch."

In announcing this reorganization the President said, "The basic purpose of the Federal Security Agency is the conservation and development of the human resources of the Nation. Within that broad objective come the following principal functions: Child care and development, education, health, social insurance, welfare and recreation, apart from the operation of parks in the public domain. These functions constitute a natural family of closely related services. For example, the development of day-care centers for children has involved joint planning and service by specialists of the Children's Bureau, the Office of Education, the Public Health Service, and other agencies. The schools are both a major consumer of public health services and a leading vehicle for health education. The promotion of social security involves a whole battery of activities, especially

social insurance, public assistance, health and child welfare."

#### NATIONAL SCHOOL LUNCH ACT

The National School Lunch Act (H.R. 3370), was passed in May and supersedes the prevailing arrangement of a temporary year-to-year program. It declares that it is the policy of Congress:

"... as a measure of national security, to safeguard the health and well-being of the nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other food, by assisting the states, through grants-in-aid and other means, in providing an adequate supply of foods and other facilities for the establishment, maintenance, operation, and the expansion of nonprofit school lunch programs."

Under the Act which makes the school lunch program permanent, federal funds are available to public or non-profit elementary and high schools. The grants-in-aid will be administered by the Department of Agriculture and made to state departments of education for allocation to schools.

In order to share in federal aid, schools must serve lunches that meet the minimum nutritional requirements prescribed by the Secretary of Agriculture, they must be served free or at reduced cost to children who are determined by local school authorities to be unable to pay the full cost, and the program must be operated on a non-profit basis. A further provision prohibits both the Secretary of Agriculture and the State Education Department from imposing personnel, curriculum instruction, or similar requirements in carrying out the Act.

Funds are allocated jointly on the basis of the number of school children and the relative need for assistance as indicated by the per capita income of the state. For the first three years of the program, states must match the federal grants dollar for dollar; by 1955, the state support must be at least

three times the federal grant. However, exception is made for states whose per capita income is less than that of the United States. In such instances, the percentage of state aid may be decreased by the percentage which the state per capita income is less than that of the country as a whole.

#### TEXAS MEDICAL CENTER

Announcement has been made of plans for the development of the Texas Medical Center in Houston. The initial \$20,000,000 of the approximate cost of \$100,000,000 has been provided by the M. D. Anderson Foundation.

Four colleges will participate in the program of the center: Baylor University, which is constructing a \$2,000,000 school of medicine scheduled for completion in December, 1946; the University of Texas, which will operate a cancer research hospital, school of dentistry, postgraduate and graduate school of medicine, a school of public health and training courses for all public health workers, and an institute of geographic medicine; the University of Houston which will administer the central School of Nursing; and Rice Institute which will cooperate with the center in research.

#### DR. HUGO MUENCH APPOINTED TO HARVARD PROFESSORSHIP

The appointment of Hugo Muench, M.D., Dr.P.H., of the staff of the International Health Division, Rockefeller Foundation, New York City, to be Professor of Biostatistics at the Harvard School of Public Health, Boston, has been announced. Dr. Muench will succeed Professor E. B. Wilson who retired recently.

Dr. Muench received his medical degree from Washington University, St. Louis, in 1918, and his doctorate in public health from Johns Hopkins School of Hygiene and Public Health in 1932. He currently is the Chairman of the

Vital Statistics Section of the American Public Health Association.

WILLIAM P. SHEPARD, M.D., BECOMES  
PRESIDENT ELECT OF NATIONAL  
TUBERCULOSIS ASSOCIATION

The National Tuberculosis Association has announced that William P. Shepard, M.D., Third Vice President of the Metropolitan Life Insurance Company with headquarters in San Francisco, Calif., and Chairman of the Committee on Professional Education of the A.P.H.A., has been unanimously chosen as president elect of the N.T.A. at their meeting in Chicago on March 9. Dr. Shepard succeeds Dr. Victor F. Cullen of Maryland who is resigning because of ill health.

THE TAFT-SMITH-BALL HEALTH BILL

Senator Taft of Ohio introduced into the Senate early in May a bill covering a program for hospital, surgical, and medical care for those unable to pay for such care out of their own resources. This has been hailed by the press as an opposition measure to the Wagner-Murray-Dingell bill. Senator Taft's measure provides for the creation of a national health agency under which all health functions of the federal government, including the Public Health Service, would be administered. This agency would be directed by an administrator appointed by the President, for whom the Surgeon General of the U. S. Public Health Service would substitute when necessary.

The bill would appropriate from general funds two hundred million dollars annually for the next five years to be allocated to the individual states to provide hospital, surgical, and medical service for those in need or those able to pay only in part. The plans of the individual states would require approval by the Surgeon General of the Public Health Service, but, on failure to approve, the state agency could appeal to

a national Health Council. This council would consist of the Surgeon General ex officio as chairman and eight members appointed by the administrator, five of whom would be persons well known in the health field, and at least three doctors of medicine. The other three would be persons familiar with the needs for medical care.

Another section of the bill would provide dental health service through allocation to the individual states and would also provide for research, including particularly neuropsychiatric research.

The bill makes no provision for the development of local public health service.

PURDUE UNIVERSITY CONSIDERS RAT  
CONTROL

"Plans for unrelenting war on the rat . . ." was the theme of a short course on pest control problems held under the direction of Dr. J. J. Davis, Head of the Department of Entomology at Purdue University during the period April 29 to May 3. Sanitary engineers from 75 cities in 17 north central states attended and participated in the study.

Coöperating with Purdue University in the short course was the U. S. Fish and Wildlife Service, the U. S. Public Health Service, and the Indiana State Board of Health. The economic and public health importance of rats and insects, general factors of a rat control program and specific methods of rodent control were the chief topics.

Dr. Davis expects to make this an annual course at Purdue.

EYE SCHOLARSHIPS

The Lions Club of New York will provide four scholarships annually for the advanced study of the eye at New York University College of Medicine. It was announced recently as a \$2,000 check for this year was presented to the college. Dr. Currier McEwen.

Dean of the college, predicted great benefits not only to the four beneficiaries, but to their patients throughout their careers, men they will train and persons who will profit by their research. The four will be selected by the university's Department of Ophthalmology.

DR. MCGAVRAN HEADS PUBLIC HEALTH  
DEPARTMENT AT UNIVERSITY OF  
KANSAS MEDICAL SCHOOL

Edward G. McGavran, M.D., M.P.H., has announced his resignation as Commissioner of Health of the St. Louis County Health Department, Clayton, Mo., to become Professor and head of the Department of Preventive Medicine and Public Health at the University of Kansas School of Medicine, Kansas City, Kans. Dr. McGavran, who is a graduate of the Harvard Medical School and the Harvard School of Public Health, has served as a member of the Executive Board of the A.P.H.A. since 1943.

HARVARD APPOINTS PROFESSOR FAIR  
DEAN OF ENGINEERING

Harvard University announced on June 6 the appointment of Professor Gordon M. Fair, Abbot and James Lawrence Professor of Engineering, and Gordon McKay Professor of Sanitary Engineering, as Dean of the Graduate School of Engineering at Harvard, effective July 1. Professor Fair, who holds degrees from Harvard and Massachusetts Institute of Technology, has been a member of the Harvard faculty since 1918. He succeeds Dean Harold M. Westergaard who has retired.

WISCONSIN STATE BOARD REORGANIZED

The Wisconsin State Board of Health has been reorganized to include five main sections to facilitate public health administration in the state. The Board is now composed of Sections on Preventable Disease, Sanitary Engineering,

Local Health Service, Maternal and Child Health, and General Administration.

Dr. Allan A. Filek, Madison, is Supervisor of the Section on Local Health Services. Dr. Harry M. Guilford, Madison, Director of the Bureau of Communicable Diseases, will direct the Section on Preventable Disease, and Dr. Amy L. Hunter, Madison, will continue to head the Section on Maternal and Child Health. L. M. Warrick is in charge of the Section on Sanitary Engineering. One new division has been created under General Administration. Known as Central Statistical Services, it will have charge of tabulating and making available all statistics for the use of public health personnel in the state. Vivian Holland was appointed Acting Chief Statistician.

RESEARCH ON RHEUMATIC FEVER

With the appointment of Dr. Francis F. Schwentker as Professor of Pediatrics at the Johns Hopkins University School of Medicine, Baltimore, and Pediatrician in Chief of the Johns Hopkins Hospital, effective July 1, an intensive program to study rheumatic fever will begin at the hospital.

Dr. Helen B. Taussig has been conducting clinical research in rheumatic fever at the Harriet Lane Home for Invalid Children, an affiliate of Johns Hopkins. The new program, which will incorporate her work, will be carried out in two directions, the prevention of the underlying streptococcic infection and a study of the mechanism by which a streptococcic infection is concerned in the etiology of rheumatic fever.

ARTHUR G. COLE

Visitors to the office of the Health Department of the District of Columbia after July 2, 1946, are going to miss Arthur G. Cole, Chief Clerk. On that date, Mr. Cole will have served forty

years in the District Health Department. He has seen it grow from an employed group of 52, with an appropriation of \$92,000, to 2,100 employees with an appropriation of \$5,397,100.

Mr. Cole will devote his well earned leisure to travel.

#### DR. RUTH PUFFER VISITS CHILE

Ruth R. Puffer, Dr.P.H., Director of the Statistical Service of the Tennessee Department of Public Health, Nashville; has been appointed visiting professor of the School of Public Health of the University of Chile for the term from June to August, 1946. She will also be a consultant on statistical and tuberculosis work for Chile. Her visit is under the sponsorship of the Rockefeller Foundation, which has been instrumental in the establishment of this school of public health and which has assisted in the training of public health specialists for Chile. Dr. Puffer is on leave of absence from her position in the Tennessee Department of Public Health. She serves also as Secretary of the Vital Statistics Section, A.P.H.A.

#### BIENNIAL CONVENTION OF NURSING ORGANIZATION, SEPTEMBER 23-27

It is expected that 12,000 professional nurses will attend the Biennial Convention in Atlantic City, N. J., September 23-27, of the American Nurses' Association, the National League of Nursing Education, and the National Organization for Public Health Nursing. In this first large convention of the profession since Pearl Harbor the members will take stock of wartime achievements and plan the most effective ways in which nursing can meet the challenge of post-war health problems. The 50th anniversary of the American Nurses' Association, which now has a membership of over 180,000, will be featured during the meeting.

Among the subjects to be discussed are federal legislation affecting nursing.

personnel problems including collective bargaining, the relation of practical to professional nursing, and economic security for nurses.

#### A.W.W.A. INSTALLS OFFICERS AT ST. LOUIS MEETING

The sixty-fifth Annual Conference of the American Water Works Association was held in St. Louis, Mo., on May 6-10, with a registration of 1,517. The previous record was 1,467 at Kansas City in 1940. The three elected officers are as follows:

*President*—Wendell R. LaDue, Chief Engineer and Superintendent, Bureau of Water and Sewerage, Akron, Ohio.

*Vice-President*—N. T. Veatch, Consulting Engineer and Partner, Black and Veatch, Kansas City, Mo.

*Treasurer*—William W. Brush, Editor, *Water Works Engineering*, New York, N. Y.

## PERSONALS

### Central States

RAY A. JACOBSON, D.D.S.,<sup>†</sup> of Wasau, Wisc., has been appointed first Director of the Montana Dental Health Division of the State Board of Health. He previously served as Director of the Dental Division of the Oregon State Board of Health.

EDWIN H. JORRIS, M.D.,<sup>†</sup> of Madison, Wisc., who recently was released from service in the Navy, has been named Assistant State Health Officer for Wisconsin. CORNELIUS A. HARPER, M.D.,\* also of Madison, formerly State Health Officer, has been acting as Assistant at the request of the Board.

FRED P. LONG, M.D.,<sup>†</sup> of North Platte, Neb., who has been in military service, has returned to the State Department of Health as Director of Communicable Disease Control.

HARRY R. MARLATT, M.D.,<sup>†</sup> Peoria

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

Heights, Ill., Assistant City Health Officer, has been named Health Officer of the newly organized full-time Peoria County Health Unit. A seven member board has been set up with EARL E. DOWNING, Elmwood, Ill., County Superintendent of Schools, as President.

B. A. POOLE,\* Director, Bureau of Sanitary Engineering, Indiana State Board of Health, has been elected Director of the Indiana Section of the A.W.W.A. for a period of three years.

WALTER STOEFFLER, M.D., of Indianapolis, Ind., has been named Pediatric Consultant in the Division of Maternal and Child Health, Indiana State Board of Health.

EDWARD S. WEISS,† formerly of Lansing, Mich., has been appointed to the U. S. Public Health Service and assigned to the State Health Department of Richmond, Va. He has had recent overseas service with the public health section of the Second Military Government Regiment and other medical units of the Seventh Army.

### Eastern States

OSWALD T. AVERY, M.D.,† of the Rockefeller Institute for Medical Research, has been awarded the Kober Foundation Medal of Georgetown University for his investigations connected with pneumonia.

FRANCIS B. CARROLL, M.D., D.M.D., M.P.H.,\* has recently been appointed Assistant Director of Medical Services, Branch Office No. 1, Veterans Administration, in Boston, Mass. Dr. Carroll has completed 55 months of service with the Army Medical Corps. While serving as Chief of Preventive Medicine Service, Headquarters First Service Command, he

was awarded the Legion of Merit Medal for "exceptionally meritorious service in connection with the use of sulfadiazine as a prophylactic in the prevention of meningococcus meningitis."

LOUIS I. DUBLIN, PH.D.,\* New York, N. Y., has been named an Officer of the Order of Public Health of the Republic of France, by decree of the Office of the Ministry of Population. The honor is in recognition and appreciation of a survey of child health and other health problems carried on in France by Dr. Dublin as representative of the American Red Cross during the fall of 1945.

PROFESSOR GORDON M. FAIR\* has been appointed Dean of the Graduate School of Engineering at Harvard University, effective July 1. He succeeds DEAN HAROLD M. WESTERGAARD, who retired June 30. Professor Fair has been a member of the Harvard faculty since 1918.

CHARLES E. GILL, M.D., M.P.H.,† has returned to his former position as District Health Officer with the Massachusetts Department of Public Health after 45 months' military service. He has been assigned to the Berkshire District with headquarters in Pittsfield, Mass.

M. W. JENNISON, PH.D.,† of the Department of Biology, Massachusetts Institute of Technology, Cambridge, Mass., has resigned to become Professor of Bacteriology in charge of the Division of Bacteriology, Department of Plant Sciences, Syracuse University, Syracuse, N. Y., effective September 1.

EUGENE E. LAMOUREUX, M.D.,† of Wethersfield, Conn., has been appointed Director of the Bureau of Preventable Diseases of the Connecticut State Department of Health to succeed MILLARD KNOWLTON, M.D.,\* of Hartford, who has retired after 23 years' service.

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

## CHANGES IN HEALTH PERSONNEL IN MASSACHUSETTS:

WILLIAM J. WELCH, M.D., has been appointed Physician-in-Chief of the Mobile Blood Donor Unit of the Division of Biologic Laboratories, Massachusetts Department of Public Health. Dr. Welch, who served for 2 years in the European Theatre of Operations, has charge of the organization and technical operation of the field team which collects the voluntary blood donations.

ROBERT E. OBER, M.D.,† Epidemiologist with the Division of Communicable Disease, Massachusetts Department of Public Health, has returned to duty following 29 months' overseas service with the Mediterranean Allied Air Forces.

ROBERT A. MACCREADY, M.D.,† recently discharged from the Medical Corps of the U. S. Army where he held the rank of Major, has returned to the Massachusetts Department of Public Health as Epidemiologist in the Division of Communicable Disease. He will be in administrative charge of the Department's Laboratory Approval Program.

MARY CARR BAKER,† formerly Supervisor of Public Health Education, Massachusetts Department of Public Health, is now Field Program Supervisor of the Department's new Blood Program. As field representative, Mrs. Baker supervises collaborative activities between the department, the American Red Cross, and community organizations in arranging for local participation in the Blood Donor Service.

PHILIP W. JOHNSTON, Ph.D.,† has returned to the Division of Maternal and Child Health as Re-

search Consultant in Field Service in Child Growth and Development, his duties including the preparation and validation of tests of vision and hearing for school children. During the war, Dr. Johnston held the rank of Lieutenant in the U. S. Naval Reserve. He was first attached to the Bureau of Naval Personnel as a psychologist, but later spent 18 months in the Pacific area as Radar Officer on the U.S.S. Boston.

ELIZABETH E. BARRY, R.N., B.N., has been appointed Supervising Instructor in Public Health Nursing (Pediatrics), Bureau of Public Health Nursing, for the new Rheumatic Fever Program which is soon to be established in the Massachusetts Department of Public Health.

JANE Y. HARSHBERGER, R.N., M.A., has recently joined the staff of the Bureau of Public Health Nursing as Supervising Instructor in Public Health Nursing. She is conducting an educational program in maternity nursing for public health and hospital nurses.

MORTON ROBINS, M.S.P.H.,† of Albany, N. Y., has been separated from service and appointed Director of the Statistical Analysis Bureau, Medical Records Division, Veteran's Administration, Washington, D. C. During 1944, he served as Statistical Consultant for the Mediterranean Theatre of Operations and in 1945 as Chief of the Medical Records of the Pacific Theatre of Operations.

DALE SCHOLZ, M.D., M.P.H., who has recently completed the course in public health at the Columbia School of Public Health, New York City, has been appointed Health Officer of Middletown, Conn.

COL. CHARLES D. SHIELDS, who recently returned from 4 years' service overseas, during part of which he

\* Fellow, A.P.H.A.

† Member, A.P.H.A.



held the position of Chief Public Health Officer in Bavaria, has been appointed Commissioner of Health of Buffalo. He will succeed FRANCIS E. FRONCZAK, M.D.,\* who is retiring after 36 years of service.

JULIA TAYLOR, M.S., who has been staff nutritionist with the Moton Health Service of the Community Service Society of New York, has resigned and has been appointed nutrition consultant on the staff of the Harlem Tuberculosis and Health Committee of the New York Tuberculosis and Health Association, New York, N. Y.

### Southern States

ROBERT J. B. ANDERSON, M.D., formerly of San Antonio, Tex., on loan from the U. S. Public Health Service, has been appointed Chief of the Bureau of Tuberculosis, California State Department of Health, with headquarters in San Francisco.

LUDWIK ANIGSTEIN, M.D., PH.D.,† Associate Professor of Tropical Medicine, Department of Preventive Medicine, University of Texas School of Medicine, has accepted the invitation of the UNRRA to participate in the Medical Teaching Mission to Poland as lecturer on communicable diseases for a period of three months. Lectures and seminars on the recent advances in this branch will be offered to the medical profession at several Polish universities.

ASA BARNES, M.D.,† has been transferred from the National Headquarters of the American National Red Cross, Washington, D. C., to San Francisco as Medical Director in charge of the Pacific Area office.

J. J. BLOOMFIELD,\* Senior Sanitary Engineer, Industrial Hygiene Division, U. S. Public Health Service, Washington, D. C., recently left for

Puerto Rico to survey the industries and make recommendations for an industrial hygiene program.

EVERETT E. CARRIER, M.D.,† of Knoxville, Tenn., has been appointed Health Officer of Giles County, serving part time in charge of the unit in Lincoln County.

HERMAN L. FELLTON† is now associated with the Orkin Exterminating Company of Atlanta, Ga., as Technical Director. Mr. Fellton recently has been placed on inactive duty after serving for 5 years in the Sanitary Engineering Division of the U. S. Public Health Service with the rank of Major.

### CHANGES IN HEALTH PERSONNEL IN GEORGIA:

ARTHUR W. HILL, M.D., of Atlanta, Ga., formerly with the State Department of Public Health in Malaria and Hookworm Service, has accepted the position of Commissioner of Health for the Thomas-Grady Counties Health Unit.

GUY V. RICE, JR., M.D.,† of Albany, Ga., recently returned from military service, has been named Assistant Director of the Division of Maternal and Child Health of the Georgia State Board of Health, succeeding WILLIAM B. HARRISON, M.D.,† who resigned to become Regional Medical Director for both the Northeastern and Northwestern Sections.

HERBERT A. HUDGINS, M.D.,† has been appointed Health Officer for Cleveland County, Shelby, N. C. Dr. Hudgins has been recently released from the Army as a Lt. Colonel in the Reserve Corp. While in the Army, he served as a Venereal Disease Control Officer, in Philippine Civil Affairs, and Military Government in Japan.

EDWARD V. JONES, JR., M.D., of Hamp-

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

ton, Va., has recently become Director of Venereal Disease Control for the Richmond Health Department, succeeding CARLETON H. WATERS, M.D., who has been transferred by the U. S. Public Health Service to Norfolk, where he will have charge of the Rapid Treatment Center for Venereal Diseases.

FREDERICK L. KNOWLES, JR., of Baltimore, Md., Senior Biophysicist, National Institute of Health, has been named Editor of the *Journal of the National Malaria Society*, succeeding ROBERT B. WATSON, M.D., formerly with the Tennessee Valley Authority, who has joined the staff of the International Health Division of the Rockefeller Foundation.

ARTHUR RIKLI, M.D., has become the first Director of the newly-created Montana Board of Health Tuberculosis Control Division. He was an Assistant Surgeon with the U. S. Public Health Service in Washington, D. C., before going to Montana.

#### CHANGES IN HEALTH PERSONNEL IN SOUTH CAROLINA:

CLARENCE L. GUYTON, M.D.,† Columbia, who recently received his discharge from the Army Medical Corps, has resumed his position as Director of the Division of Cancer Control, State Board of Public Health, and has been appointed Director of the Division of Venereal Disease Control, effective February 1.

JOSEPH M. CHRISOLM, M.D.,† who has been directing the Venereal Disease Division during the war emergency on assignment from the U. S. Public Health Service, will continue as Assistant Director pending a new assignment.

WILLIAM C. WHITE, M.D., of Washington, D. C., Chairman of the Com-

mittee on Medical Research, National Tuberculosis Association since 1921, resigned, effective March 1, ending more than 25 years' service to the organization. Dr. White has been succeeded by HENRY S. K. WILLIS, M.D.,† Superintendent and Medical Director of the William H. Maybury Sanatorium at Northville, Mich., who will act as Interim Director pending the selection of a permanent director.

JOHN M. WHITNEY, M.D.,\* has been reappointed Superintendent of the New Orleans City Board of Health, a position he has held since 1944.

SIDNEY J. WILLIAMS, M.D.,† has been named Health Officer of Sumter and Greene Counties with headquarters in Livingston, Ala., succeeding ROBERT D. PRATT, M.D.

#### Western States

##### CHANGES IN HEALTH PERSONNEL IN CALIFORNIA:

MIRIAM HUBBELL, M.D.,† of El Centro, Calif., has resigned as Health Officer of Imperial County, effective March 1, to join the Los Angeles County Health Department in Glendale.

HAROLD J. FRANKLIN, M.D., formerly of Trenton, N. J., has been named Acting Health Officer for Imperial County.

LENOR S. GOERKE, M.D.,† formerly of Woodland, recently discharged as Lt. Colonel from the Army Medical Corps, has been appointed Director of the Bureau of Medical Services of the Los Angeles City Health Department.

WINSLOW WHITNEY SMITH, Ph.D.,† who has been Professor of Bacteriology at the University of Southern California, has resigned to accept appointment as head of the Department of Bacteriology and Public Health at Utah State Agricultural College, Logan, Utah.

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

HUBERT O. SWARTOUT, M.D., DR.P.H.,\* who for 3 years has served as Health Officer of the Los Angeles County Department of Health, Los Angeles, Calif., has resigned and plans to live in Santa Maria, Calif.

### Foreign

COLONEL E. COTTER of the Indian Medical Service, has resumed his post as public health commissioner with the Government of India, New Delhi, succeeding COL. BOZMAN, who is on leave.

### Deaths

EDWARD E. HAMER, M.D.,† State Health Officer for Nevada, died at his home in Carson City on April 13. Dr. Hamer first became a member of the A.P.H.A. in 1927.

FREDERICK LUDWIG HOFFMAN, LL.D., died in San Diego, February 24, aged 80. He served as Consulting Statistician of the Prudential Insurance Company of America from 1894 until 1935, when he retired at the age of 70. Dr. Hoffman wrote surveys of tuberculosis, cancer, public health, nutrition, malaria, suicide, homicide and various problems of longevity. He held memberships in many medical societies and was a charter member of the National Tuberculosis Association, Director of the American Cancer Society, and a member of the National Safety Council. He served as a member of the Governing Council of the A.P.H.A. He has been credited with the founding of the American Cancer Society.

HERMAN GROVER MORGAN, M.D., Secretary of the Indianapolis City Board of Health for 33 years and in 1945 appointed Secretary of the newly created Indianapolis Board of Health

and Hospitals and Director of Public Health, died on January 8, aged 60.

### CONFERENCES AND DATES

American Congress of Physical Medicine—24th Annual Session. Hotel Pennsylvania, New York, N. Y. September 4-7.

American Dietetic Association—28th Annual Meeting. Netherland Plaza, Cincinnati, O. October 14-18.

American Hospital Association—48th Annual Convention and Post-war Conference. Philadelphia, Pa. Week of September 30.

American Medical Association—7th Annual Congress on Industrial Health. Copley-Plaza Hotel, Boston, Mass. September 30-October 3.

American Nurses Association, National Organization for Public Health Nursing, National League of Nursing Education—Biennial Nursing Convention. Atlantic City, N. J. September 23-26.

American Public Health Association—74th Annual Meeting. Headquarters—Public Auditorium, Cleveland, O. November 12-14.

Meetings of related organizations (November 11):

American School Health Association  
American Social Hygiene Association  
Association of Maternal and Child Health Directors

Association of Reserve Officers of the U. S. Public Health Service

Conference of Municipal Public Health Engineers

Conference of Professors of Preventive Medicine

Conference of State Sanitary Engineers

Conference of State and Provincial Public Health Laboratory Directors

Council of State Directors of Public Health Nursing

National Committee of Health Council Executives

Public Health Cancer Association

American Public Works Association—Public Works Congress. Fort Worth, Tex. September 22-25.

Iowa Public Health Association—Annual Meeting. Hotel Ft. Des Moines, Des Moines, Iowa. September 26-27.

Michigan State Medical Society—81st Annual Session. Book-Cadillac Hotel, Detroit, Mich. September 25-27.

National Association of Housing Officials. Cleveland, O. October 10-12.

National Committee for Mental Hygiene—Annual Meeting. Hotel Pennsylvania, New York, N. Y. October 30-31.

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† Member, A.P.H.A.

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## The Manitoba Health Plan

F. W. JACKSON, M.D.

*Deputy Minister, Department of Health and Public Welfare,  
Winnipeg, Manitoba, Canada*

ON January 10, 1945, the Honorable Ivan Schultz, Minister of Health and Public Welfare in the Manitoba Government, announced over the radio The Manitoba Health Plan, opening his remarks with that well known quotation from Juvenal "Life is not to be alive, but to be well." The Minister went on to say "Each patient who is ill is an individual, but he is also a member of a community, and in treating such patient the physician is not only treating an individual but a member of a community. For this reason, health and disease are no longer matters of private concern only. That is why every civilized state in the world has taken up the fight for health. There still remain two main problems in the field of health which must be solved: First, how effectively to prevent preventable diseases; Second, how to make modern medical skill and services available to all our people."

Keeping these two problems in mind in preparing our Plan, four objectives had to be given consideration. These were:

1. The service provided must take care of the most urgent needs of our people.
2. The provision of the services should be in such a manner that the required technical

personnel will have working conditions conducive to a high quality of service.

3. The services provided should have a reasonable chance of being maintained despite any change in the economy of the Province.

4. The services should be so planned as readily to fit into any plan of health insurance which may be inaugurated at the federal level of government.

In this Central Province of Canada the most urgent need has always been, and still is, better health service for our rural people. The Manitoba Health Plan has as its first concern the provision of a high standard of health care in rural Manitoba.

The Plan has four basic principles:

1. Prevention of disease
2. Diagnostic facilities
3. General practitioner services
4. Adequate hospitalization

The Manitoba Legislature at its recent session, without a dissenting vote, passed an Act, introduced by the Government, the title of which clearly indicates its purpose: "An Act to Provide for the Improvement of Health of the Citizens of the Province." This Act establishes the administrative machinery by which and through which we propose to carry these principles into effect.

We believe that prevention of disease, the first of these principles, is the joint

responsibility of the Province and the local community, which in Manitoba is the municipality. This service can best be provided by full-time local health units.

For this purpose the rural municipalities of our Province have been grouped into twenty-four districts, varying in population from 15,000 to 31,000 and with areas of approximately 900 to 1,500 square miles.

All the employees in health units will be civil servants, with salaries paid by the Provincial government. All will have the usual civil service perquisites, such as pension rights, vacation with pay, sick leave with pay, yearly increases in salary, etc.

It is not necessary to go into details of the services that will be available through health units; these are well known to all public health workers. Disease prevention of course will receive the major emphasis but we like also to think of the health unit as a case finding agency, seeking out disease in its incipient stage and bringing it in for diagnosis and treatment. This immediately makes the second basic principle, "diagnostic facilities," a necessity.

Prevention of disease being the only sound foundation upon which to build any extension of health services, no community can apply for and receive diagnostic facilities until it has provided itself with full-time health services.

The Provincial government will establish diagnostic facilities through district and area hospitals by installing therein at government expense adequate x-ray and laboratory equipment. Trained technical and consultant personnel properly to carry out and interpret the procedures requested by the patient's physician will also be provided, as well as the necessary supplies to operate the service.

There will be a small service charge to the individual for x-ray plates, \$1 for the first plate and \$.25 for each subse-

quent plate, the total charge in any one illness not to exceed \$5. This will mean that every physician in the Province will have close at hand procedures available to help him make a diagnosis in any given case, without any limitation because of increased cost to the patient.

The local health services and diagnostic facilities are estimated to cost \$1 and \$.50 per head per year respectively. The local government or municipality will be required to pay to the Province one-third of this cost and the services will be available to every resident of the area served, on the request of the individual's physician.

If we are going to obtain young well trained medical personnel to practise in our rural areas we must give them the facilities with which to provide a scientific medical service. Adequate diagnostic services readily available to all practitioners are essential to an improved medical care program. When all our rural hospitals are properly equipped and the technical and consultant personnel are provided, every doctor will have close at hand the tools he needs for proper diagnosis and treatment of disease.

When any community has provided itself with full-time health services and diagnostic facilities and wishes to provide itself with a general practitioner on a prepayment basis, then the Province will subsidize such service to the extent of one-sixth of the cost, not to exceed \$.50-per head of population per year.

Payment for provision of such services will be a matter of arrangement between the medical practitioner, or organized medicine, and the community being served, and may be by way of salary, capitation fee, or payment for services rendered, or by any combination of these.

The legislation giving effect to this part of the plan as set out in Part III of the Act to a very large extent

adopted legislation already in existence for engaging physicians as municipal doctors. It does, however, greatly widen the methods by which municipalities can pay for medical care. We consider provision for medical care in advance a vital, basic, and fundamental principle of the plan, and have gone as far as we possibly can to encourage municipalities and physicians to make arrangements to this end.

We believe that a general practitioner service should definitely be defined and for this purpose are using the following definition:

Any medical, obstetrical or minor surgical service that can be rendered in the doctor's office, the patient's home, or a hospital situated in the community in which the physician practises, and shall include non-complicated obstetrics and uncomplicated fractures, but shall not include any major surgery. Major surgery shall include the removal of tonsils, adenoids, appendix, gall-bladder, etc.

In brief, the family physician should be chiefly concerned with the health care of a child from the time of its conception until the child enters school and for the medical care of all people in his community within the limitations of the definition.

We realize of course that of necessity some very definite supervision of contracts between municipalities and the doctor must be provided. The legislation presently in effect makes it compulsory that all contracts receive the approval of the Minister. A standard type of contract, now under revision, is being used, and as revised will give ample protection to the public as to the services they will receive as well as safeguarding the rights of the physician. It is interesting to note in this connection that the last contract submitted for approval by a municipality gave the doctor more net salary than he anticipated, provided him with a registered nurse in his office, as well as all other expenses, allowed him time off with pay to attend medical society

meetings, and gave him a *two* months vacation with pay each year.

No health plan can properly function without well equipped hospitals with an adequate number of beds for the communities' needs. In 1942 a commission was established in Manitoba to study hospitalization and recommend a plan to the government. After two years of intensive work a plan was presented to and accepted by the government. It provides three types of hospitals:

1. A medical nursing unit, or doctor's workshop, in every town or village where a doctor practises. This is a building containing the doctor's office, examining room and emergency room, together with 6 to 12 beds for maternity and medical cases, with of course a labor room and nursery.
2. A district hospital of from 20 to 50 or more beds containing diagnostic equipment, operating room, and all other facilities that go to make a good rural hospital.
3. Area hospitals—these will be completely equipped institutions to take care of all types of medical, surgical, and obstetrical cases that cannot or should not be looked after in a less well equipped hospital in their area.

At each area hospital radiologists and pathologists will be provided and their services will be available without charge on the request of any physician at the area hospital or any district hospital in the area. The provision of at least minimum hospital facilities for every physician and the consultative services of radiologists and pathologists will be another incentive to physicians to provide a good medical service in rural Manitoba.

When the hospital plan is completely inaugurated we will have 4 area hospitals, 33 or 34 district hospitals, and 75 to 80 medical nursing units, besides several other special and general hospitals in the City of Winnipeg.

The cost of providing hospital facilities will be the responsibility of the local community and provision is made in the legislation for raising the money required for buildings and equipment as well as for operating costs by means

of a tax levy on the land of the hospital district.

There is a constant fear of government intervention in business with its beurocracy. The Health Services Act which controls the operation of The Manitoba Health Plan is so designed as to make it impossible for absolute control to rest in the hands of government officials. The Act provides for the operation of the plan by means of regulations, and no regulations can become effective unless they have first been approved by an Advisory Commission. This Commission is composed of representatives of those who are to provide the service and those who are to receive it. It consists of 3 members nominated by the Manitoba Division of the Canadian Medical Association, 1 member nominated from the Faculty of Medicine by the University of Manitoba, 3 members nominated by the Union of Manitoba Municipalities, and 3 members appointed by the government. The Deputy Minister of Health and Public Welfare is an ex-officio member, so that out of a total membership of 11 only four are directly appointed by the government. This Advisory Commission has been in operation for nearly a year and the coöperation of the medical and other members of the Commission has made excellent progress possible.

A further safeguard in respect to Hospital Facilities is provided through a Hospital Council set up under "The Hospital Aid Act." This council consists of representatives of hospital administration, the Provincial Government, municipal officials and the nursing and medical professions. All matters in relation to hospital districts, location and construction of hospitals must receive the approval of this Council before they are presented to the Minister for consideration, and he in turn has the final advice of the Advisory Commission under The Health Serv-

ices Act, when required, to guide him.

Provision is also made in The Health Services Act to provide municipalities with special taxing powers through a personal health levy to raise funds for the municipal share of operating the plan. The Act also makes funds available for the training of the necessary medical personnel, both graduate and undergraduate, as well as nurses, technicians, and others who may be required for the purposes of the plan.

The Manitoba Plan will fit in without any difficulty with the Dominion Government's proposal for health insurance. The first stage of the federal government Plan suggests that general practitioner service, hospitalization, and diagnostic facilities must be provided before other benefits can be considered. In Manitoba only hospitalization must be added to complete the first stage of the Dominion health insurance proposals.

This of course cannot be done until more hospital beds are available. As the Dominion Government proposes to provide one-third of the cost of preventive services and three-fifths of the cost of medical and other care, we in this Province will be in an advantageous position as and when health insurance at the federal level becomes law.

Medicine and government must co-operate in any plan for the improvement of health services to our people. Medicine has the technical knowledge required to provide the services. Government has or should have the knowledge as to where the services are required and the administrative set-up necessary for the orderly extension of such services to all of our people.

The Honorable Stuart Garson, Premier of Manitoba, in a public statement said, "We are not regimenting you into the plan. Whether you come in or stay out is your local choice. However, we know that this plan is workable with

the active and enthusiastic support of people who are free to come in or stay out as they please, but who come in from conviction that it is worth while."

We believe that Manitoba's Health Plan is the democratic way of helping our people, particularly those residing on the farms and in the villages, to help themselves.

The demands for the services run far ahead of our ability to provide them, primarily because of lack of trained personnel, but by the end of 1946 over one-half of our rural people will have available a worth while preventive service through the establishment of health units. Diagnostic facilities will likely be available in two areas. Present indications are that probably

four new 30 bed rural hospitals will be nearing completion and 12 to 15 medical nursing units or doctors' workshops will be under construction. Twenty-two municipalities have had for some years now legislative authority to supply their residents with prepaid general practitioner service, and the service is already being provided in fifteen.

We look forward with confidence to the day when all our people will live and work and play in the sure knowledge that all the benefits medical science has to offer for the cure of illness, the prevention of disease, and the promotion of health are available to every citizen, no matter where he may live or what his economic status may be.

## Best Sellers in the Book Service for July

An Appraisal Method for Measuring the Quality of Housing: A Yardstick for Health Officers, Housing Officials and Planners. Part I. Nature and Uses of the Method. American Public Health Association. 1945.....	\$1.00
The Control of Communicable Diseases. American Public Health Association. 6th ed. 1945 .....	.35
Dairy Bacteriology. Bernard W. Hammer, Ph D. 2nd ed. 1938.....	5.00
Diagnostic Procedures and Reagents. American Public Health Association. 2nd ed. 1945 .....	4.00
Essentials of Industrial Health. C. O. Sappington. 1943.....	6.50
Preventive Medicine and Public Health. Wilson G. Smillie, M.D. 1946.....	6.00
Standard Methods for the Examination of Dairy Products. American Public Health Association. 8th ed., 1941.....paper	1.75
Suggested School Health Policies. National Committee on School Health Policies. 2nd ed. rev. 1945.....	.25
Voluntary Health Agencies. An Interpretive Study. Selskar M. Gunn and Philip S. Platt, Ph.D. 1945.....	3.00

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AMERICAN PUBLIC HEALTH ASSOCIATION



# Plague Control with DDT and "1080"

Results Achieved in a Plague Epidemic at Tumbes, Peru, 1945 \*

ATILIO MACCHIAVELLO, M.D., DR.P.H., F.A.P.H.A.

*Consultant Epidemiologist, Pan American Sanitary Bureau, Lima, Peru*

THE certain, rapid, and persistent action of DDT (dichlorodiphenyl-trichloroethane) as a pulicide, and the high effectiveness as a raticide of sodium fluoroacetate ("1080"), justify an extension from the rather limited sphere of laboratory experiment to application in the field of these new measures, with the view of eradicating bubonic plague by the elimination, or at least the control, of the reservoirs and vectors of *Pasteurella pestis*. The value of the simultaneous use of these chemical substances in plague prevention will be the subject of a separate report. The present paper deals exclusively with the control, under emergency conditions, of an epidemic of bubonic plague at the height of its evolution.

## ANTECEDENTS

### The National Anti-Plague Service of

\* This study has been made possible thanks to a grant-in-aid from the Institute of Inter-American Affairs. Administrative details of the campaign discussed were under the direction of Dr. Benjamin Mostajo, Chief of the Peruvian National Anti-Plague Service. Field work was done with the active cooperation of Mr. Benjamin Mostajo Patrón, Chief Inspector of the Plague Regions of Peru. We wish to express our thanks for the advice and constant aid of Dr. John D. Long, Chief Traveling Representative of the Pan American Sanitary Bureau, Lima, Peru. The Minister of Health, the Director General of Health, the Prefect of Tumbes, and the political and military authorities of the zone gave moral and material assistance to our work, for which we are duly grateful. A detailed report on the situation in Tumbes, and on the campaign carried out, written by the author, Dr. Mostajo, and Mr. Mostajo Patrón, was presented, through the Pan American Sanitary Bureau, to the Minister of Health of Peru; those interested may obtain copies by addressing The Director, Pan American Sanitary Bureau, Washington, D. C.

the Peruvian Ministry of Health, through an arrangement with the Pan American Sanitary Bureau, assigned to the author the technical direction of an anti-plague campaign in the city of Tumbes, Peru, with the object of impeding the extension of an outbreak of bubonic plague which appeared in that locality during the last trimester of 1945. It was agreed to use only DDT and 1080 in accordance with a previously developed plan. The theoretical bases of this plan may be summarized as follows:

1. Elimination of the flea vector potentially capable of attacking man, which we assumed could be accomplished by the application of DDT in powder form to the floors of human habitations. This procedure we termed "surface application" of DDT.

2. Elimination of the flea vector from rats and rat nests by a second application of DDT to the spaces beneath floors, between double walls and roofs, to dead spaces in general, and to rat burrows and places habitually frequented by rats. We termed this the "subsurface application" of DDT.

3. Extensive application of sodium fluoroacetate ("1080") in poisoned bait to eliminate the murine population once it had been freed from fleas.

## MATERIALS AND METHODS

The application of DDT was accomplished by using a "dust" composed of 10 per cent DDT in talc or pyrophyllite, as well as DDT diluted to 5 per cent and to 2 per cent in refined wheat flour; the following dusting apparatuses were used: (a) The Cyanogas Foot-Pump made by the American Cyanamid and Chemical Company; (b) the Cyanogas Citrus Duster, manufactured

by the same company; (c) the Degesch Powder Duster, Type 6, used formerly for applying calcium cyanide; (d) the Root "Giant Spot Duster," Model F-4, made by the Root Manufacturing Company. These were the only dusters at our disposal, although other good types are on the market. The foot-pump was used for dusting rat burrows; the spot duster for persons, vehicles, etc.; and the Degesch centrifuge for treating floors and other large surfaces.

The 1080 (sodium fluoroacetate) was obtained through the Pan American Sanitary Bureau from Mr. Richard A. Ormsbee, Technical Aide, ICC Coördinator Center, Rodent Control Subcommittee, National Research Council. It was used in three kinds of bait or vehicles: (a) water, in 1/1,000 solution; (b) small cakes (using 5 parts of 1080 per 1,000) made with toasted wheat flour, 10 kg.; evaporated milk, 800 ml.; Parmesan cheese, 1 kg.; lard, 1 kg.; and salt, 30 gm. The poison was dissolved in water before adding it to the mixture. The dough was rolled out on metal sheets, dried and browned in the oven, and cut into small

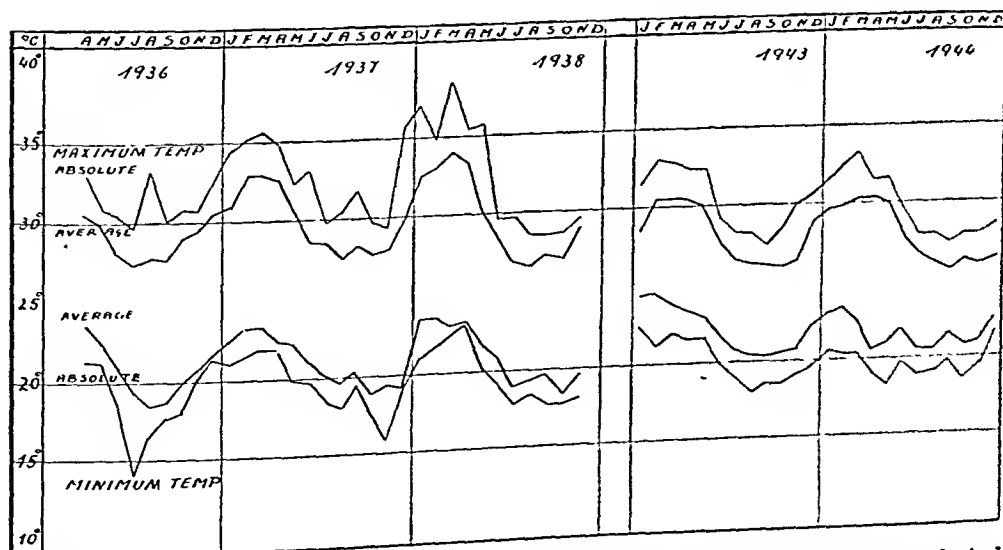
square cakes of about 1.0 gm. weight; (c) rolled oats, mixed with poison in the proportion 5 parts of 1080 per 1,000.

For placing the poisoned baits the city was divided into 9 sectors (see map), and the baits were applied so that two contiguous sectors received, in each of three consecutive poisonings, different baits.

Personnel consisted of 1 technical director, 1 assistant director, 1 clinician to care for the sick, 1 physician in charge of sanitating the city, 6 brigades (later 3) for applying DDT, each brigade composed of 1 inspector and 2 laborers, 3 inspectors for applying 1080, and 1 technician and 1 servant for laboratory work. Isolation facilities for patients of both sexes were provided; and a central office and laboratory were set up, the latter with minimal equipment for bacteriological and investigative work.

#### DESCRIPTION OF TUMBES

The city of Tumbes is the capital of the Department of the same name, in the Republic of Peru; Tumbes Department forms part of the border with the



GRAPH 1—Absolute and Average Maximum and Minimum Temperatures. Meteorological Observatory at Zorritos, Department of Tumbes, 1936-1938; 1943-1944.  
COURTESY OF DR. G. PETERSEN

Republic of Ecuador. The city is situated at 3°34'16" South latitude, and at 80°28'01" longitude West of Greenwich, at 33 meters above sea level; it is a few kilometers from the Pacific coast, and lies on the banks of the Tumbes River. The population is about 10,000, and there are 1,600 dwellings, nearly all of primitive construction, chiefly bamboo, wood, or adobe. There are no sewers, nor is there a public water system. On account of the rains (December to May) the houses are elevated, leaving spaces beneath which are rat harborages. Climatic data do not exist; but in Graph 1 appear a few figures from the petroleum port of Zorritos, about 30 kilometers to the south. During our stay the temperature varied between 26° and 34° C., and the humidity between 75 and 94 per cent. An imperfect census of the population, not including about 2,000 members of the Army and police, nor the suburban sectors not included in our campaign, gave the following figures: dwellings, 1,357; individual rooms in these dwellings, 3,820; inhabitants of these, 7,388; males, 49.2 per cent (male children, 24.1 per cent); females, 50.2 per cent (female children, 21.9 per cent). The average number of rooms per house was 2.8, and the average number of inhabitants per house was 5.4.

#### EPIDEMIOLOGICAL FACTS AND FACTORS

Bubonic plague has occurred in Tumbes in 1909, 1915, 1922, and 1940; in the 1940 outbreak, 18 cases were recognized officially.

*Rats:* *R. rattus alexandrinus*, 95 per cent; *R. r. rattus*, 5 per cent; *R. norvegicus*, so common in other localities in the country, does not exist. The rats live in the spaces beneath floors, between double walls and ceilings, in straw roofs, etc. The number of burrows in the ground is small, and these generally are found in the pit privies;

their scarcity may be explained by the sandy constitution of the soil.

*Rat fleas:* At the beginning of the work, 172 fleas were collected from 38 rats, the general flea index for the rats of the city being 4.5; but the index was 11.3 for the rats trapped in the epizootic foci, and 2.1 for the rest of the town—97 per cent of the fleas were *X. cheopis*.

*Fleas in rat nests:* From 31 rat nests the total number of fleas collected was 156, with an average of 5.03 fleas per nest. Thirteen nests had no fleas, which elevated the figure of fleas per nest with ectoparasites to 8.6. Of all the fleas, 6 were *P. irritans*, taken from a single nest in a bedroom, and the rest were *X. cheopis*.

*Free-living fleas:* There were many *P. irritans* on the floors of the houses; on the earth floors, especially in patios (yards), *Ct. canis* predominated. There were a few *X. cheopis* found on the floors of warehouses, and on the clothing of persons working in the epizootic foci. One of our laborers contracted plague in one of these foci.

*Rainfall:* When the plague appeared the rains had not yet commenced. The first rains began at the end of December, and they became torrential in the following months. There was fear that the rain would dislodge the rats and fleas from the spaces beneath the floors, which in part of the city were totally covered with water, into the domiciles themselves.

*The epizootic:* The most probable source of the infection in Tumbes was plague-infected fleas transported in sacks of merchandise from the zone of Villa de Eten and Monsefú, in the Department of Lambayeque, about 600 kilometers to the south, where to date human and rodent plague persists. The merchandise was received in the Public Market of Tumbes in July or August, 1945—that is to say, during the "non-plague" season. At the beginning the

epizootic was slow in developing, reaching its height in September, by which time secondary foci of murine plague had already been formed in different parts of the city. The initial focus of the Market began to produce human cases of plague in October. During this month and the one following at least 21 secondary plague foci were formed, the chief one being that of the house of S. M., which was surrounded by the warehouses and storerooms of the State Tobacco Monopoly, the State Salt Monopoly, the State Department of Warehouses and Shipments. In all of these places dead rats were found almost daily, the carcasses being located behind piles of thousands of sacks of merchandise, stacked in such a way that it was almost impossible to make adequate inspections, since the warehouses were so completely filled. In order to collect the dead rats it was necessary to open passageways between the sacks, a job which took several days. The epizootic focus in the house of S. M. was beneath a cement floor which on the surface appeared to be in perfect condition; but the ground beneath was honeycombed with rat galleries and burrows. These, beginning at the earth borders, reached various depths and distances beneath the cement slabs, and the floor had to be

destroyed to disclose these facts. The peculiar location of this focus explains its slight human repercussions.

Of the 21 epizootic foci mentioned—scattered about the city as shown on the map—10 were inactive when we arrived; abundant mummified rat carcasses were found in the burrows and in the double walls. In 3 of these foci the epizootic was followed by 1 or more human cases. The single focus of the Public Market, which was extinguished by demolishing the building, produced 9 cases of plague.

The 11 active epizootic foci were confirmed as shown in Table 1. In designating these foci as being active, only those rats found dead or captured alive are considered which were proved in the laboratory to be infected with plague; the same applies to the fleas from rats or nests. The relation of the infected rats and fleas with the human cases is evident.

Of 139 rats examined, 38 (27.3 per cent) were positive for plague. Of the total examined 17 were found dead in the house of S. M. (10 of these with plague), and 15 were trapped in the same place (5 with plague) during the first five days of our work in Tumbes. Of the remaining active foci, four were of importance, producing between 30 and 70 per cent of the plague rats. The

TABLE 1

*Flea or Murine Plague Foci, Active at the Beginning of the Antiplague Campaign, Tumbes, November 30, 1945*

Location	Dead Rats	Plague Infected Rats (Trapped)	Plague Fleas from Rats	Rat Nests with Plague Fleas	Human Cases of Plague
1. Huáscar 324 and 326	+	+	..	..	..
2. Huáscar 412	+	+	..	+	+
3. Bolívar 231 (Mr. Maceda)	+	+	..	..	..
State Tobacco Monopoly	+	..	..	+	..
State Rice Monopoly	..	..	..	+	..
Cinema	+	..	..	+	..
State Salt Monopoly	+	..	..	+	+
4. Ugarte 119, 159 and 161	+	+	+	+	..
5. Piura 210, 220 and 230	+	..	+	..	+
6. Piura 231 and w/n	+	+	+	..	+
7. Cementerio 129-131	+	+	+	+	+
8. Jaén 204	..	..	+	..	+
9. Hospital	..	..	+	..	+
10. Teniente Vásquez w/n	+	..	..	..	+

majority of the active secondary foci were developing when we arrived.

FLEAS INFECTED WITH PLAGUE

Of 29 lots of rat fleas classified, 13 were inoculated into guinea pigs, 7 proving positive. Of 12 lots of fleas taken from 18 rat nests, 7 were positive for plague on guinea pig inoculation.

THE EPIDEMIC

It is probable, though not certain, that there were cases of human plague toward the end of September, 1945. In October there were at least 6 cases, none of which was diagnosed as plague. In November, before the first case was diagnosed, there were at least 10 more cases. The first case diagnosed was that of a child 2½ years old, the son of the Government physician. Since the cases which occurred in November were still in evolution, it was possible to hospitalize them and to confirm the

diagnoses by laboratory examinations. From October, 1945, to February, 1946, cases occurred as shown in Table 2.

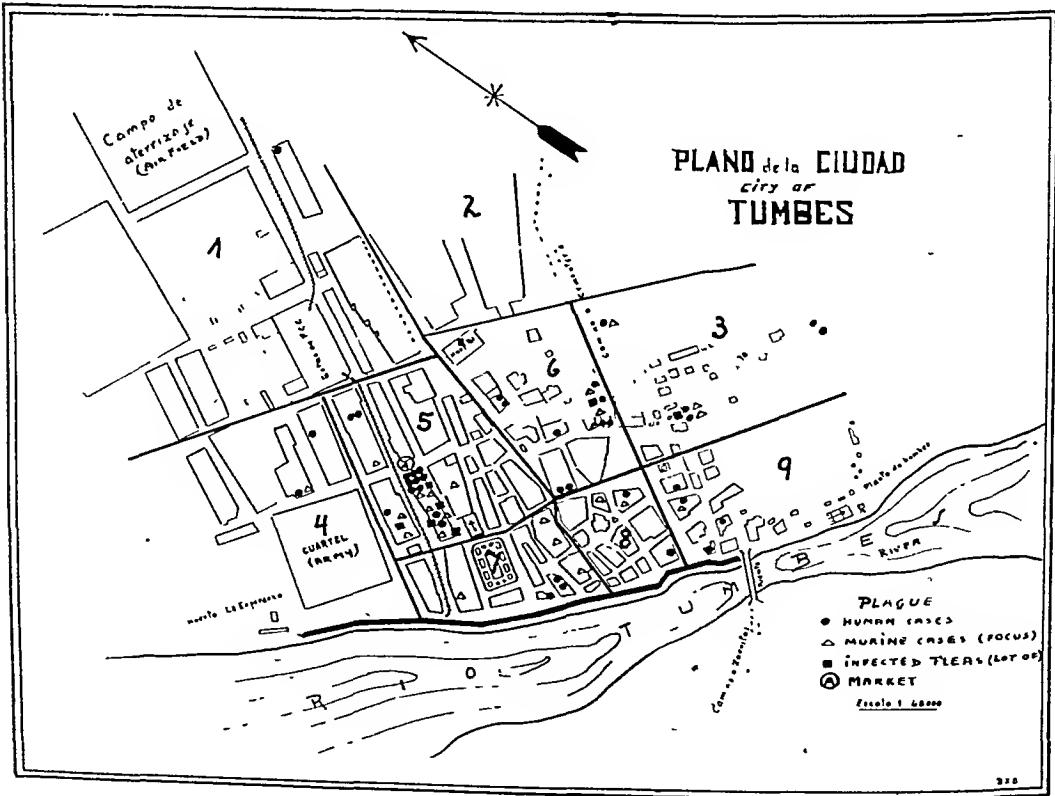
TABLE 2

Weeks	Cases
Oct. 7-13	1(?)
Oct. 14-20	1(?)
Oct. 21-27	2(?)
Oct. 28-Nov. 3	2(?)
Nov. 4-10	5
Nov. 11-17	5
Nov. 18-24	11
Nov. 25-Dec. 1	3
Dec. 2-8	8
Dec. 9-15	1
Dec. 16-22	0
Dec. 23-29	0
Dec. 30-Jan. 5	0
Jan. 6-12	0
Jan. 13-19	0
Jan. 20-26	1

40\*

\* Eight cases confirmed only clinically by private practitioners and accepted by us after epidemiological investigation of each case

The distribution of the cases in the city, and their relation with the epizootic foci, may be seen on the map. Of the 40 cases accepted by us, 14 (35



per cent) died. Twelve of the patients were children of 10 years of age or less; 13 were young persons from 11 to 25 years old; 12 were adults from 26 to 55; and 3 were over 55 years of age. Age limits were from 2½ to 95 years. Twenty-six of the cases occurred in males, and 14 in females. Two cases were ambulatory; 4 were mild; 8 were rapidly fatal, with an average duration of 3 days; 3 had a longer, though fatal, course, with an average duration of 31 days, and with death due possibly to inadequate treatment; and there were 3 fulminating cases, death occurring within 12 hours. The different degrees of gravity of the cases were due, in our opinion, to the progressive diminution in virulence of *Pasteurella pestis* in the fleas, in accordance with the period of extrinsic incubation of the infection, more than to variations in individual resistance. The bubos were localized as follows: Twenty-nine inguino-crural (5 double); 5 cervical; 1 axillary; 1 axillary and cervical; 4 with uncertain or unknown localization. In 2 cases, plague "carbuncle" occurred on the dorsum of the foot, 1 and 3 days, respectively, before the development of the corresponding bubo. The chief symptoms were: bubo, fever, chills, dizziness, headache, vomiting, and in the grave cases, unconsciousness and coma.

The treatment instituted prior to our intervention was excessive. Serum in small doses was given, and sulfathiazole in enormous doses, such as: 42 and 50.5 gm. (in a boy of 9); 52.5 gm. (in a boy of 14); 72, 72, and 73 gm., etc. Secondary manifestations included cutaneous eruptions, edema, oliguria, and incontinence of urine. Apparently sulfathiazole did not influence the evolution of the disease, although the writer has proved its beneficial effects in guinea pigs, which agree with the results already established in the literature.

Of the cases in which the site of infection was known, 9 pertained to the focus in the Public Market; 2 to the house of S. M.; 3 to Alfonso Ugarte Street; 4 were related to the sacks in the warehouses where rats had died; and the rest to diverse foci (see map).

#### APPLICATION OF DDT

From November 30 to December 10, 1945, 10 per cent DDT powder (Neocid) was applied with mechanical dusters to the floors of 1,357 dwellings, with a total of 3,820 rooms; and also to 47 public offices, churches, barracks, moving picture houses, schools, warehouses, etc. Also treated were the houses, clothing, household goods, furniture, etc., of 30 plague patients, including the clothing of contacts. With special equipment, DDT was applied to 7,000 bales of tobacco and sacks of cereals, and to several thousand empty sacks.

The average area treated per room was 15 square meters. Using 203 kilos of 10 per cent DDT, a total area of 81,000 sq. m. was covered, giving an average of 2.5 gm. of 10 per cent DDT per sq. m. The inhabitants were told not to sweep out the houses for at least a week. This method of using DDT we term "surface application" of DDT.

From the 11th to the 19th of December, 1945, the "subsurface application" of DDT was carried out; that is, the use of 5 per cent DDT (2 per cent in cement buildings) in the spaces between ceilings and roofs, double walls, double boundary walls, beneath floors, in corridors and passageways used by rats, and in general in all "dead" and empty spaces which could be considered as accessible to rats or fleas. In all, 1,006 houses, with 2,643 rooms, were treated with 170 kilos of 5 per cent DDT and 74 kilos of 2 per cent DDT. DDT mixed with flour in strengths of 5 per cent and 2 per cent

proved to be an excellent insecticide against flies and other diptera, except mosquitoes.

From December 20, 1945, to January 19, 1946, the application of DDT was repeated in 1,295 dwellings having a total of 4,026 rooms, using 230 kilos of 5 per cent DDT. In this treatment were included governmental and public buildings of all kinds, and dwellings located in the central part of the city. In all applications, special attention was given to rat burrows and harborages.

Results obtained may be best appreciated by examining Table 3, and may be summed up as follows:

1. The next to the last case of plague occurred 4 days after the termination of the

"surface application" of DDT. It had its origin from a sack of rice in the Government warehouse of the Department of Warehouses and Shipments, a site in which rats, coming from the adjoining house of S. M., were repeatedly found dead of plague. Rats which died among the stacked sacks left their infected fleas there. The Rice Monopoly distributed these sacks among local stores, and the case in question, a woman, proprietress of one of these stores, slept beside the spot where a sack of cereal had been left. The final case, which occurred more than a month after the penultimate, was related to the house of S. M., which has been mentioned as the focus of an intense epizootic. The sick person, before falling ill, had purchased and carried to his house all the wood in a storeroom of S. M. which was located beside the epizootic focus, and which had been kept closed up to that time. We wish to point out that both the rice warehouse and the storeroom for wood

TABLE 3

*Results of the Application of DDT against the Development of a Plague Outbreak, Tumbes, 1945, Judged by the Evolution of Flea-rat Index and the Incidence of Murine and Human Plague*

	<i>Before the Application of DDT</i>	<i>After the 1st Application of DDT</i>	<i>After the 2nd Application of DDT</i>
<b>I. Rat Fleas:</b>			
Rats examined	38	36	49
Fleas collected	172	30	37
Global Flea Index	4.5	0.83	0.755
Flea index, epizootic areas	11.3	5.3	0.86
Flea index, other areas of the city	2.1	0.39	0.66
Per cent of <i>X. cheopis</i>	97.0%	100.0%	100.0%
Total reduction of rat fleas		81.6%	83.3%
Bis, epizootic areas		50.5%	92.4%
<b>II. Rat burrow fleas:</b>			
Number of burrows examined	31	13	
Bis, without fleas	13	8	
Fleas collected	156	8	
<i>X. cheopis</i>	150	8	
Average number of fleas per burrow	5.03	0.61	
Bis, per burrow with fleas	6.66	1.6	
Reduction of fleas in burrows		87.9%	
<b>III. Free living fleas:</b>			
Free living fleas	Abundant	Very scarce	Very scarce
<i>X. cheopis</i> living free on the floor of the houses	Scarce	None	None
<i>X. cheopis</i> on the clothing of persons	Scarce	None	None
<b>IV. Rats examined:</b>			
Rats examined	139	45	49
Plague positive	38	3	0
Per cent of plague rats	27.3%	6.66%	0%
<b>V. Fleas from rats and rat burrows:</b>			
Lots of inoculated fleas	25	7	
Plague lots	14	0	
Per cent of plague positive lots	56%	0%	
<b>VI. Human plague cases:</b>			
Before application of DDT	29		
During application of DDT		9	
Bis, 2nd application of DDT		1	
After 2nd application of DDT			1

had received as thorough as possible a treatment with DDT; and we reiterate that both instances prove that the application of DDT without the prior removal of stacked sacks and similar merchandise is ineffective, since DDT acts solely as a contact poison. In the tobacco warehouse a direct proof of the existence of infected fleas was the infection with plague of one of our laborers, whose job it was to apply DDT to several thousand bales of tobacco. In this instance, each bale was individually treated—baled leaf tobacco apparently does not repel fleas from the outside of the bales—and no additional cases occurred. To sum up, the two final cases of the outbreak were due to defective treatment of the respective foci, the warehouses, in that only the surfaces of the stacks of baled merchandise were treated with DDT. It is obvious that the cost of a correct application of DDT in warehouses filled with piled merchandise may be beyond the financial resources of the sanitary services; also, an excessive amount of DDT may be required.

2. There was an 81.6 per cent reduction in the flea infestation of rats after the first application of DDT, and an 83.3 per cent reduction after the second. In the epizootic foci this reduction was in the order of 50.5 per cent and 92.4 per cent respectively.

3. After the first application of DDT there was an 87.9 per cent reduction in the flea population of rat nests and burrows; in the epizootic foci the reduction was 81.5 per cent.

4. Rat plague was reduced by 76.3 per cent after the first application of DDT, and by 100 per cent after the second.

#### APPLICATION OF SODIUM FLUOROACETATE (1080) AS A RATICIDE

The city was divided into 9 sectors (see map), and the poisoned baits were placed in the dwellings in 5 localities: floors, rat burrows, "high interiors" (including ceilings, spaces between ceilings and roofs, attics, rafters, flat roofs, etc.); "low interiors" (including spaces beneath floors, spaces between boundary walls, in double walls, and in "dead" and empty spaces of all sorts within the houses); and exteriors, especially in pit privies.

The poisoned baits—cakes, rolled oats, or water—were made up so that a dose was 10 ml. of water poisoned with 1080, or 3 or 4 gm. of rolled oats

poisoned with 1080 in the proportion of 5 parts of poison per 1,000, or one cake weighing approximately 1 gm., with the same concentration of the poison as in the rolled oats bait. The baits were carefully placed in an endeavor to keep them out of the reach of children and domestic animals. The rolled oats were handled with spoons; the poisoned water and the cakes were handled with bare hands, but the inspectors were warned not to smoke, and to avoid putting their hands to their mouths. Not more than 5 baits were placed in any one house. No accidents occurred, in placing the poisoned baits, among human beings, nor were there any complaints about the killing of domestic animals, except a few cats.

#### RESULTS

Due to the shortage of personnel the control of the poisoning was deficient. In Table 4 can be seen the number of doses of each type of bait placed in 1,200 dwellings. The poisoned water was the most difficult to handle, and only 481 domiciles were treated with this method, in which 713 doses (1.4 baits per house) were placed. Nevertheless the results with the water were the most satisfactory, since 151 dead rats were recovered, or 21.1 per each 100 baits, 0.31 per domicile. The 1,648 doses of rolled oats placed in 796 dwellings killed 113 rats, or 6.9 rats per 100 baits, and 0.142 per dwelling. The 2,247 cake baits, placed in 809 houses, killed 51 rats, or 2.3 rats per 100 baits, or 0.063 rats per house. In all, 4,608 baits deposited in 1,200 dwellings (2,086 dwellings, considering independently the dwellings treated in each poisoning) killed 315 rats, a relatively small figure which does not represent the true results, since dead rats were collected and examined only when their presence was reported by the householders. These figures are mentioned only for the purpose of comparing the



TABLE 4

Total Number of Baits Poisoned with Sodium Fluoracetate (1080), Distributed at Tumbes, 1945  
(See the text for a detailed description of the different types of poisoned baits used—cakes, rolled oats, or water solution—and also for the exact meaning of the different locations where they were placed)

Type of Bait	Cumulative Number Average of Number Houses of Treated Poisoned Baits per House			Location of Poisoned Baits in the Houses					Control of Poison Activity		
	Total Doses Dis- tributed	Floor	Rat Burrows	Low Interiors	High Interiors	Exterior	Dead Rats	Dead Rats per 100 Poisoned Baits	Dead Rats per House		
Water solution	481	1.4	713	178	16	153	320	46	151	21.1	0.31
Cake	809	2.7	2,247	339	393	643	551	321	51	2.3	0.063
Rolled oats	796	2.1	1,648	627	182	211	505	123	113	6.9	0.142
	2,086 *		4,608	1,144	591	1,007	1,376	490	315		

\* Includes 1,200 different houses

relative activity of the three types of baits used, and not as a demonstration of the raticidal effectiveness of the poison itself. Indeed, in a sector controlled by the inspectors it was observed that the proven murine mortality was 40.4 rats per 100 baits, and 1.204 rats per treated domicile. In another sector checked by the inspectors during only one afternoon the proven murine mortality from "1080" was 13.8 rats per 100 baits, and 0.453 rats per dwelling.

On the other hand, complaints of bad odors (from putrefying rat carcasses) were uniform throughout the city, which suggests that the results considered as not so favorable, from certain sectors, were due only to lack of adequate checkup. The entire population was in agreement in eulogizing the action of the poison and in declaring that there were now neither rats nor fleas in their homes.

In a rural area not included in our experiment, 150 baits were distributed on a banana plantation, and 23 dead rats were recovered in a single afternoon.

Precise data on the raticidal power of the poison will be presented in a

future report dealing with studies carried out in the city of Huacho, Peru.

#### DISCUSSION

The epidemiological situation in Tumbes at the beginning of the plague epidemic of 1945 may be characterized thus: a city in a deplorable sanitary condition, with a climate propitious for bubonic plague, and with a heavy murine population of *R. alexandrinus* exhibiting very high flea indices, the fleas nearly all *X. cheopis*. The infectious agent—*Pasteurella pestis*—imported from an endemic plague zone, encountered a medium favorable for its propagation in a rat population completely susceptible. The epizootic developed slowly in a single focus—the Public Market—during the season of the year not favorable for the spread of the disease, and then developed rapidly with the beginning of the plague season. Human plague cases occurred in relation to this focus, which was eradicated by the destruction of the Market. The murine infection spread to over 20 successive foci, half of which died out *in situ* due to the scarcity of available murine population. Up to November of 1945 there persisted an

intense epizootic focus with various others of lesser intensity; and in relation to these foci a total of 40 human cases of plague occurred.

The "surface application" of DDT wiped out the pulicine vectors living "free" in the dwellings, thus protecting the inhabitants. During the first application of DDT about 10 human plague cases developed which had been in the incubation stage at the time dusting was started. Four days after finishing this first application, one case appeared. After the second "sub-surface" application, there was a significant diminution in the number of plague rats, infected fleas on rats, and infected fleas in rat nests. There occurred the late development of one benign human case of plague due to the persistence of the infection in a site which was insufficiently treated—a place in which an intense epizootic had occurred.

It is evident that DDT was surprisingly rapid and effective in controlling the plague outbreak, especially when it is considered that the epidemic occurred in a medium highly unfavorable for the application of eradication measures, and where the outbreak was just developing. The poison 1080 completed the work of the DDT, destroying the rodent population in a high degree. The rat-flea indices, and those of plague infection, were profoundly influenced by our measures, all being very favorable at the termination of the campaign.

The plan for the work done in Tumbes followed a logical order of reasoning taking into consideration the quality of the medium, the zoological situation, and the murine and human infection. We believe that the campaign carried out can serve as an example to be followed in places where plague epizootics and epidemics are in full swing, and where *R. alexandrinus* (or *R. rattus*) and *X. cheopis* are in-

volved. Preventive measures, or the presence of *R. norvegicus*, would have required other methods of approach, as will be described elsewhere.

Previous laboratory experiments showed that a dilution of DDT mixed with inert powders in a proportion of 0.002 per cent is the minimum dose effective as a pulicide when spread so as to cover uniformly the treated surface. On the other hand, 0.05 gm. of DDT per sq. m., in any dilution, was an effective pulicide in our experience. In Tumbes we applied approximately 2.5 gm. of 10 per cent DDT (0.25 gm. of pure DDT) per sq. m. The higher dilutions require more time to eliminate the fleas. Mixtures of 2 per cent DDT in flour, applied at the rate of 10 to 15 gm. of the mixture per sq. m., are equally effective as the use of 2.5 to 3.0 gm. of 10 per cent DDT in the same area. Three gm. of 2 per cent DDT per sq. m. had the same activity as the previously mentioned mixtures; but the time required for the effect was four times greater. The mixtures of DDT and flour are attractive to flies (which is not the case with the pyrophyllite or talc mixtures), killing them in not over 12 hours. Wasps and horse-flies were also susceptible to this mixture. However, mosquitoes were not eliminated by any of the mixtures in the percentages used, due possibly to the fact that they do not rest on the floors.

Ten per cent DDT was effective against *X. cheopis* embedded in the fur of rats: but it was not lethal to *E. gallinacca*. Rats covered with a heavy dose of DDT, for example, one or two gm. of a 10 per cent mixture, may die from DDT intoxication, as they lick their fur. The application of DDT to floors was effective in eliminating *P. irritans*, *Ct. canis*, and *T. penetrans*. Free-living *E. gallinacca* resisted the action of DDT no better than the other fleas, so that the resistance of this species when embedded in the fur of

rats may possibly be due to the circumstance that, when so embedded, they leave exposed to the action of DDT only those abdominal segments which are protected by a thick coating of chitin. Similar observations have been reported by Davis.<sup>1</sup>

The residual effect of DDT was demonstrated in the persistence of its activity after the first rains had dislodged the flea population from the spaces beneath the floors of the houses.

The initial cost of the DDT application in this campaign was S/.03 per sq. m., (or less than \$0.005 US). An average of 140 gm. of 10 per cent DDT were used per house, the average amount per room being 50 gm. Costs per house were S/.1.80 (approximately \$0.27 US). In using 5 per cent DDT, an average of 193.8 gm. of insecticide was used per house, and 75.3 gm. per room, with a corresponding diminution in costs to S/.015 per sq. m. (\$0.0023 US), and S/.060 (\$0.098 US) per house.

We wish to emphasize that DDT is effective against fleas only in the places where it has been applied—it is strictly a contact poison—so that its uniform spread must be meticulously carried out. Rats may transport particles of DDT adhering to their fur; but usually only to their own burrows. Flea breeding places which are not also rat harborages (and thus more liable to treatment) persist in their infestation if they are not directly treated with DDT.

As regards 1080, we recognize that it is the best poison that we have used against rats, and we have proved to our own satisfaction its qualities as summed up by Ormsbee,<sup>2</sup> a high degree of toxicity for rodents, excellent acceptance in different baits, rapid lethal effect, absence of taste and odor, chemical stability, non-volatility, not toxic or irritating to the skin, no tolerance on ingestion of sublethal

doses, easy incorporation in baits, and low cost of production. Poisoned baits may be avoided by rats when they learn to recognize them; but this may be nullified by changing the type of bait. There are few inconveniences in using this poison, if it is carefully handled.

Three inspectors, personally placing the baits, carried out three poisonings of the city of Tumbes, using three different types of poisoned baits, in 25 working days, depositing 4,608 baits in 1,200 houses, in 2,086 visits. In other words, each inspector covered 28 houses daily, placing therein 61.4 baits. The cost of the poison per bait (per dose) was high, nearly \$0.02 US; but the total cost of the poisonings was less than \$76.00 US. The high cost per bait applied was due to the care taken in placing each bait. For reasons given earlier, figures on the cost of the poison per rat killed will not be calculated; they would give a false idea of the cost involved, since we did not find anywhere near the total number of rats poisoned.

In studies now in progress we have found that 1080 is a secondary poison for the fleas which suck the blood of poisoned rats. Even *E. gallinacea* are killed, as well as *P. irritans*, *X. cheopis*, *H. suarezi*, *Ct. canis*, *Cediopsylla inequalis*, *R. cavicola*, etc. The rapidity with which the fleas succumb depends on the level of circulating poison in the blood stream of the rats. It will be comprehended that the confirmation of this finding would be of transcendental importance in anti-plague work.

#### SUMMARY AND CONCLUSIONS

In the city of Tumbes, Peru, which has a tropical climate, 10,000 inhabitants, the majority of the houses constructed of bamboo or wattle (mud and sticks), and which has no public water supply or sewerage systems, an epizootic

of murine plague, followed by a human epidemic, broke out in the last trimester of 1945. Among the epidemiological factors of importance were the intense murine over-population with *R. alexandrinus*, with a flea index of 4.5 per rat (11.3 in the epizootic zone), the fleas being chiefly *X. cheopis*; an abundance of rat fleas in the rat nests, with an average of 5.03 fleas per nest (8.6 in the epizootic zone), practically all *X. cheopis*; an abundance of free-living fleas on the floors of houses, predominately *Ct. canis*, *P. irritans*, and *T. penetrans*; and the presence of *X. cheopis* on floors, and in the clothing of plague cases. Other important factors in the outbreak were the proximity of the rainy season, which began in December, a temperature fluctuating between 26° C. and 34° C., and a relative humidity between 75 and 94 per cent. The plague epizootic may have begun in July or August (which are not in the plague season) and progressed slowly until the beginning of the plague season at the end of September. A total of 21 foci were formed, of which 2 were intense, the first of these being in the Public Market. In these plague foci 27.3 per cent of rats found were plague-infected, as were 56 per cent of the fleas found on rats or in rat nests. The epidemic caused a total of 40 human cases, and it was not diagnosed until the middle of November, by which time more than a dozen cases had occurred. All of the cases were bubonic in type, and the case fatality was 35 per cent.

The only control methods used were DDT in powder form (diluted to 10 per cent in talc or pyrophyllite, and diluted to 5 and 2 per cent in refined wheat flour), followed by the application of sodium fluoroacetate (1080) as a raticide. The DDT was applied first to the floors of all houses (1,357, with 3,820 rooms and 7,388 inhabitants), using an average of 2.5 to 3 gm. of 10

per cent DDT per sq. m. (140 gm. per house, 50 gm. per room), to prevent the biting of the populace by infected fleas. The second application was made to the spaces between ceilings and roofs, on the flat roofs, beneath floors, between double walls, etc., using 5 per cent DDT powder. The first method we term "surface application," and the second "subsurface application." A third application of DDT was similar to the two preceding. Simultaneously with the third application of DDT, the raticide "1080" was brought into use, three types of poisoned baits being employed: A 1/1,000 solution in water, a 5/1,000 mixture in rolled oats, and a similar concentration in small dried cakes. In placing the baits, 1,200 domiciles received a total of 2,086 visits, with 4,608 baits being set out, locating them in both upper and lower parts of the houses, outside as well as inside, and also in rat burrows.

The effectiveness of the application of DDT can be appreciated by: (a) the stopping of the epidemic 4 days after finishing the first application of DDT (the one case occurring over a month later was due to the incomplete treatment of a known focus); (b) the 81.6 per cent lowering of the flea infestation of the rats, and the 87.9 per cent diminution in the numbers of fleas found in rat nests, after the first application of DDT. There was a final reduction in the number of fleas in the epizootic foci of over 90 per cent. Rat plague was reduced 75.6 per cent after the first application of DDT, and 100 per cent after the second.

The results of the use of sodium fluoroacetate (1080) were excellent, as could be judged by partial controls. In one district of the city 40.4 rats per 100 baits were killed, and 1.2 rats per house succumbed to the effects of 1080. In other sectors fewer dead rats were found, but the checking of this factor was deficient and irregular. The popu-

lation was well satisfied with the results of the poisoning.

Only mentioned here, and to be discussed in later papers, are the toxicity of 10 per cent DDT for rats (which regularly and carefully lick their fur) in dosages of 1.0 to 2.0 gm. of the powder applied to the body surfaces of the rat; and the toxicity of sodium fluoroacetate (1080) for rat fleas, which die by secondary poisoning from

ingesting the blood of poisoned rats.

The application of DDT, followed by poisoning with 1080, promises to be the procedure of choice in the control of epidemics of bubonic plague.

#### REFERENCES

1. Davis, David E. The Control of Rat Fleas (*Xenopsylla cheopis*) by DDT. *Pub. Health Rep.*, 60, 18:485-489 (May 4), 1945. *Reprint No.* 2626.
2. Ormsbee, Richard A. A Summary of Field Reports on 1080. NRC, ICC Rodent Control Subcommittee, October 26, 1945 (Mimeograph).

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## Western Reserve Expands Teaching Staff in Preventive Medicine

A series of appointments have been announced at Western Reserve University School of Medicine and University Hospitals, Cleveland, Ohio, looking toward the development of an important center for the study of disease prevention. Five physicians from the U. S. Army staff will join the university and hospital staffs during the coming summer.

John H. Dingle, M.D., will occupy the Elizabeth Severance Prentiss chair as Professor of Preventive Medicine to succeed James A. Doull, M.D., Dr.P.H., who has joined the staff of the U. S. Public Health Service. Dr. Dingle is director of the Commission on Acute Respiratory Diseases of the U. S. Army Epidemiological Board. Dr. Dingle, a native of North Dakota, has a Doctor of Science degree from Johns Hopkins and a medical degree from Harvard.

Other appointments include George F. Badger, M.P.H., M.D., as Associate

Professor of Biostatistics. Dr. Badger, formerly Assistant Professor of Biostatistics at Johns Hopkins University School of Hygiene and Public Health, was from 1942-1946 consultant to the Secretary of War in biostatistics. He is presently a Major in the Army Medical Corps.

C. H. Rammelkamp, M.D., is a graduate in medicine from the University of Chicago and also was consultant to the Secretary of War from 1943-1946.

A. E. Feller, M.D., is a graduate in medicine from the State University of Iowa. He was formerly instructor in the New York University College of Medicine and a fellow in medical science with the National Research Council at the Harvard Medical School.

R. G. Hodges, M.D., is a graduate in medicine from Harvard in 1936. He was formerly instructor in pediatrics at the College of Physicians and Surgeons, New York City.

# Education of Medical Students in Preventive Medicine\*

W. G. SMILLIE, M.D., F.A.P.H.A.

*Department of Public Health and Preventive Medicine,  
Cornell University Medical College, New York, N. Y.*

A WELL informed and coöperative group of physicians in any community is one of the greatest assets that the health officer can possess. If the health department does not have the understanding and support of the practising physicians, his work is much more difficult and often ineffective.

The great proportion of medical students will become active practitioners of medicine, and if they are well informed and properly trained in the broad concepts of preventive medicine, they should, as practitioners, not only aid the health department, but also incorporate preventive medicine in their clinical practice.

1. Thus my first suggestion is that it is the function of the medical college to train physicians in order to fit them to practise preventive medicine in an intelligent and effective way. We should not attempt to train them to be health officers or epidemiologists. We are not obligated to train them to become school physicians, directors of well baby clinics, vital statisticians, industrial hygienists, or sanitarians. Special graduate training in those fields is available to all who desire to prepare themselves for those specialties.

2. We must train practitioners of medicine for the future, and not for the present or the past. Each of our

students will have, on an average, 25 years of active professional life. They should neither be trained for the type of medical practice of the *past* 25 years, nor in accordance with our present procedures, but be prepared to meet the needs of the coming 25 years. Thus it becomes necessary to make as close an estimate as possible as to just what the practice of medicine will be during the next 25 years.

## TRENDS IN MEDICINE, AND PARTICULARLY IN PREVENTIVE MEDICINE

A. One pronounced trend is a greater realization that medicine is a social science. The powerful influence that social and economic factors may play in production of disease or in promotion of health has long been appreciated by our foremost physicians. But the developments in application of the "exact" sciences to medicine during the past 25 years—the utilization of physics, chemistry, and the biological sciences; the application of new and exact technology—have resulted in a study of *disease* as an entity occurring in a unit called man. Some of us have forgotten that the man who is ill is a social being, part of a family, and that the family is part of a larger unit, the community. It is now clear that an understanding of the impact, in a complex society, of social factors upon the community, the family, and the individual, is of paramount importance in planning for adequate medical care. It

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is clear also that we must train our young physicians to recognize these facts.

B. Changes in our population—We are an aging people. There is ample reason to believe that by 1975, when this generation of young physicians shall have finished their work, 10 to 15 per cent of the total population will have completed six decades of life. Nearly 25 million living people will have celebrated their sixty-fifth birthday. Thus there emerges the necessity for training students in the prevention and amelioration of the diseases of middle and past-middle life. The major emphasis must be in the fields of industrial disease and disaster, the prevention of accidents in the home and on the street (pedestrian fatalities from automobile accidents are in great part a hazard in geriatrics), and especially a study of proper procedures that aid in prolongation of life and prevention of unnecessary suffering and distress from the major degenerative diseases.

3. Our third postulate is that the medical student shall be taught only general principles of the control of diseases that are due to environmental factors. These are reasonably well understood, and control measures are for the most part well applied. Certainly the methods of protection from infection that is spread by water, improper sewage disposal, and through food of all types, are very effective. Air-borne infection is being actively studied, the principles of prevention are being developed, and details worked out. Most of the procedures in environmental sanitation, including industrial hygiene, housing, and accident prevention, are, in essence, engineering problems, and are not of particular concern to the physician, nor part of the training of a medical student. He will never have responsibility for their execution, and although he should be familiar with general principles, he need not be

familiar with the details of their technics.

4. The general principles of communicable disease control are reasonably well understood. Great gains are still to be made in lowering the death rate from infections. Much remains to be done in the investigation of etiologic factors and epidemiologic characteristics of infections. A great part of this work may be done by the physician in practice, since he plays such an essential rôle, as source material, in epidemiologic investigations. Thus instruction in control of communicable disease will remain an essential part of a medical student's training.

5. Unsolved fields of preventive medicine—Adult hygiene, particularly prevention of the ravages of degenerative diseases, is one of the fields that we have not developed in our student teaching. These diseases are by far the most important causes of death. Heart disease, diseases of the circulatory system, cancer, nephritis, diabetes, and the great "disabler that does not kill"—rheumatism—all should be considered extensively in preparing the future physician for his successful career.

Furthermore, it is obvious that the mass methods which have been so successful in control of communicable disease, and so useful in sanitation, do not apply to the same degree in amelioration of the effects of degenerative disease.

The prevention of the serious effects of heart disease, diabetes, or arthritis, must be a personalized activity. Successful measures result through an individual relationship of physician with patient. Thus the preventive aspects of degenerative disease are the special province and responsibility of practising physicians.

True, the community, as represented by the health department or voluntary health agency, has an important part to play through the mass method of

approach in the prevention of the ill effects of the diseases of adult life. For example, the methods that have been applied in reduction of death from diabetes in recent years have been most effective, due in great part to specific therapy that is administered by the physician, on an individual and personal basis. But the community has played an important rôle in control through general education of the public concerning the early symptoms of the disease and the necessity for early and adequate treatment. The community has also made provision for prompt and effective hospitalization and other necessary procedures in diagnosis and treatment for those who are unable to afford this care.

One principle emerges clearly as we plan for the future: Control or amelioration of the ravages of the degenerative diseases will not be effective if treatment is begun only after the disease is well established. Success will depend upon the institution of suitable measures at the earliest appropriate moment, and in advance of the appearance of frank symptoms. Dr. Milton Roemer<sup>1</sup> has set forth a schedule of preventive services for each individual which may be applied on a continuous basis, year by year, from infancy to old age. This schedule encompasses all the various measures that are at present considered effective in promotion of the potentialities of each individual. He calculates that this multitude of services, each appropriate for age and sex, may be instituted for about \$5 per annum.

One may disagree with the proposed selection of preventive services, and perhaps quarrel with his estimates of costs and other details. But there is no question concerning the soundness of general principles that are involved. They may be briefly stated as follows:

1. Given a proper community-wide organization of medical facilities, a suitable schedule of preventive services could be developed for

each individual throughout his life which could be supplied at a modest cost.

2. Preventive services, on a comprehensive individualized basis, cannot be supplied effectively on a fee-for-service schedule.

3. The most obvious development in preventive medicine during the next 25 years must be: Better distribution of medical care to all people on a comprehensive prepayment plan—the plan to include provision for every effective practical individual preventive measure.

#### THE COURSE OF TRAINING FOR MEDICAL STUDENTS

If these premises are correct, then obviously our training in preventive medicine of medical students must include:

1. A general training to obtain an understanding of the social and economic factors that influence disease, and those that promote health.

2. A study of adequacy of medical care for the community, with consideration of various plans that may be developed for securing adequate medical care, including comprehensive preventive services for each individual in the community.

3. A study of the integration of preventive medicine with clinical medicine.

4. Special consideration of the preventive aspects of degenerative disease. It is here that our primary emphasis must lie, for these are the most important problems of the future.

5. Training as in the past in the theory and practice of control of communicable disease. Emphasis must be placed on the part that each must play as a physician in control of contagion, with stress upon the special responsibility of the physician in the development of epidemiologic knowledge.

6. The teaching of the broad, general principles of environmental sanitation. This includes the control of illness by proper methods of sewage disposal, protection of water supplies, milk and food sanitation, housing and its relation to health, etc.

7. Information concerning community-wide methods for dispensing sound health knowledge to the whole people by proper health education techniques.

8. A basic discussion of public health administration and the relationship of the physician to the community health service.

*Limited curriculum*.—The medical student has only so many hours in a day,



and is given a short 4 years to complete his academic training. Introduction of new teaching content, with increase of teaching hours, is not looked upon with favor by curriculum committees. Unless one can demonstrate that the department uses the time assigned to it for effective teaching, then the instructor is not in a good position to ask for more time. Thus some of the material that is now presented to medical students in courses of public health must be given up if new teaching is to be introduced.

What traditional teaching shall we omit? Obviously, we should give up teaching details relating to environmental sanitation. These are not of primary concern to the physician. The field trips to sewage disposal plants, milk pasteurizing plants, food storage and sanitation—all can be taught in a comprehensive way by visual education methods. Furthermore, public health administration need not be presented in great detail.

How much vital statistics should be taught to medical students? Is this a function of preventive medicine? Certainly the department should teach the young physician the basic part that he will play in collection of vital data, and should emphasize the great importance of vital statistics to the public health.

In addition, this department, or some other one, should teach the medical student to interpret medical literature intelligently, to read critically and to understand the probable error, the pitfalls of dealing with a small series, the dangers inherent in sampling, and the hazards of drawing hasty conclusions from insufficient data.

We shall not discuss teaching techniques or methods of presentation of material. Interesting and effective teaching devices are limited only by the imagination of the teacher and the resources of the environs. The community is our unit for study. One must utilize all the social and clinical re-

sources that are available, in the university hospital, the local health department, and in the entire community. The department may call to its aid the public health nurse, the medical social worker, the nutritionist of the hospital and of the health department, the school physician, the clinicians in the prenatal and well baby clinics, the directors of tuberculosis and of venereal disease services, the dental clinic director, and the leaders in the voluntary health and social agencies of the area. In addition, the clinicians from other departments of the medical college must be drawn into the teaching of preventive medicine, for our major purpose is to teach the student to integrate the practice of preventive with curative medicine. The psychiatrist and the psychiatric social worker are important assets to this teaching.

In summary, the teachers of preventive medicine and public health in a medical college must be men of vision, resourcefulness, and imagination. They must make an attempt to determine the trends in nation-wide planning for adequate medical care, and foresee the probable major needs of the community for health protection during the next generation. They must be able to coordinate the teaching of preventive medicine in all the university departments, including bacteriology, pathology, physiology, and all the clinical departments, from obstetrics and pediatrics to dermatology and radiology, and must serve as interpreter to the faculty of the medical college of the community point of view. They should prepare the medical student, by precept and example, to integrate preventive medicine with clinical medicine, and should emphasize the one basic principle that medicine is, after all, a *social science*.

#### REFERENCE

1. Roemer, Milton I. A Program of Preventive Medicine for the Individual. *Milbank Mem. Fund Quart.*, vol. 23, no. 3.

# Training for Health Education\*

IRA V. HISCOCK, Sc.D., F.A.P.H.A.

*Professor of Public Health, Yale University, New Haven, Conn.*

THE objective of a training program for health education is to assist in the preparation of professional personnel for leadership in the development and execution of soundly conceived community health education programs. Responsibility for success in the attainment of this goal is shared by those engaged in recruitment, those who provide the training, and those who employ and direct the activities of health education personnel. Hence, mutual understanding of the problems and joint planning of recruitment, training, and service programs are essential.

What are some of the factors bearing on the situation?

1. Local, state, and federal health authorities (including directors of some 20,000 voluntary health organizations) are becoming increasingly aware of the importance of health education and are seeking trained personnel who have vision, enthusiasm, knowledge and skill for a task of considerable magnitude and of great responsibility.

2. The background of most so-called health educators is diverse; and the personnel have been recruited mainly from medical, nursing, and teaching professions. According to H. E. Kleinschmidt, "The good physician who is also a competent health educator is a *rara avis*, probably a biologic 'sport'; and of such we shall never have enough."

3. Relatively little attention was paid to instruction in health education until recent years. Even in the *American Journal of Public Health* references to training were lacking until twelve years ago when Routzahn noted that only a small proportion of health agencies employ staff members experienced in using several techniques required for various forms of health education. W. P. Shepard emphasized in 1937 that training of personnel is the best remedy to cure the old vicious circle comprising inadequate public health funds, incompetent personnel, lack of appreciation leading to still less adequate funds, and, perforce, less competent personnel.

4. Two closely related factors are involved in health education:

a. Application of health knowledge by the individual for improvement of health practices and attitudes, embracing both health teaching of children in school and adult education.

b. Acceptance of responsibility for participation by citizens who become aware through health education experiences of the needs and services, and then support the development of adequate health programs.

5. While the official health agency should lead in the planning and development of the health educational program, only by the coöperation of all related official and voluntary agencies and professional groups can a community program be effective. Health education must be the concern of the entire staff of all the health organizations,

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each contributing to it wherever it can do best through its personal contacts and services. To insure that the elements be properly interwoven and a sound focus be obtained, there is required the use of sound educational techniques under the leadership of trained and experienced workers.

6. "Demonstrations by several states and by the Public Health Service during the past four years have shown that people may be motivated to solve their own problems and to utilize the technical guidance of their health department when there is on the staff of the local health department an individual skilled in community organization and also grounded in the fundamental sciences of public health, health education, and public relations. . . . Personnel so trained are unavailable at the present time. Health officers contemplating the initiation or expansion of their health education programs should be prepared to recruit and train personnel to man the program."<sup>1</sup>

7. Suggested qualifications of health educators and functions in health education have been outlined by the Committee on Professional Education of the American Public Health Association, and are being tested in several state and local programs. Additional plans need to be formulated to extend and improve health education in schools and colleges, and such plans must be coordinated with other features of community health education.

8. Courses of instruction have been developed in several universities; but these need continuing review. Groups concerned with employment, recruitment, and training can be helpful in planning.

9. National and state agencies, official and voluntary, and foundations have facilitated training through educational grants.

10. The problem of giving professional training to promising newcomers

to the public health field is important; but recent college graduates and graduate students without a good background in the biological sciences require more than a college year of preparation for the technical duties involved in health education.

11. Facilities in existing institutions are taxed. More instructors qualified to lead seminar and laboratory classes, to conduct research, and to supervise field training are urgently needed by universities; and the university and the health agency programs need to be closely linked in order that a comprehensive, realistic teaching program may be carried out.

In considering a training program, it is well to bear in mind certain principles recently enunciated by President Harold W. Dodds of Princeton University.<sup>2</sup> He points out that sound methods of scholarship are the methods of clear and imaginative thinking in any field or occupation. Their materials are not restricted to what is to be found in libraries, but include data from those areas of experience revealed outside of books as well as in them. For example, work on a job may be education in itself.

Training in scholarship, Dodds emphasized, is basically education in the collection and appraisal of facts and values and the building of them into new patterns of thought and action. It means distinguishing between truth and error, and, furthermore, a recognition that facts do not speak for themselves. Raw disconnected facts are useless knowledge if one does not know how to use them. "To be useful, facts must be woven into fresh and coherent relationship, calling for imagination of a high order. . . ." "Critical appraisal must be supplemented by active imagination, in short, by creative thinking. While imagination alone can be unreliable, without it, a man remains a hewer of wood and a drawer of water for his superiors who possess it."

The health educator will be helped by a broad cultural background of education, including the development of appreciations and skills in the use of the English language. He also needs a knowledge of such factors as:

1. The functions, structure, and nutrition of the body, elements of the commoner pathologic processes and elements of epidemiology
2. Motivation and behavior in human life
3. Society as it is constituted—social forces and their control
4. Forces which affect living—environment and economics
5. The scientific method in approaching the process of living, distinguishing science and pseudo-science
6. The processes of education—why we learn and how we learn

There is also need for knowledge and skills which are not specifically professional in nature. The division between essentially basic preparation and strictly professional training cannot be readily drawn. Furthermore, experts in various techniques who are not health educators are commonly needed to assist in editorial work and in the development of films, exhibits, and other graphic materials; and a knowledge of these resources and of how to work effectively with specialists in these fields is necessary.

The Committee on Professional Education of the American Public Health Association, in outlining the above qualifications, properly indicated the importance of sufficient flexibility in training programs to allow adaptation to the scope of work required from the individual. Both in recruitment and in training, four qualities discussed by Albert W. Hull of the General Electric Company as needed for success in industrial research may be suggestive for health education, namely: character, aptitude, attitude toward work, and knowledge.<sup>3</sup> A university's function in regard to aptitude or ability is guidance. While aptitudes can only be recognized, perhaps attitudes can be taught. Hull states that industry is

more interested in what a man thinks in his heart, that is, in his attitudes toward his work and his subject and his fellow man, than in what he knows. "If he loves his work, so that days are too short, and has a passionate desire to know, which drives him to read and study, he will soon outstrip the most erudite pedant." University training at best is too brief to provide more than a small fraction of the knowledge that is needed for health education as well as for industrial research discussed by Hull. "The rest must be acquired during his career by continuous study. The university has the task of imparting these attitudes which make self-education possible, and grooving them deeply so that they will endure. But it should not be forgotten that the attitude is the real goal of the training."

Brief reference has been made above to the importance of a background of basic cultural education, of basic science education, of training in education and educational psychology, and of social science education. If there are serious gaps in these areas in relation to the work to be undertaken, the student in training for health education will require more time for preparation than is provided in the regular public health curriculum which is already overloaded for the period usually allowed. The process of recruitment and training would be strengthened if a plan were developed for giving undergraduates while in college as well as college administrators an idea of opportunities in public health and of basic courses desired for preliminary preparation. Students who show interest in these fields might be given opportunity to work in health agencies during summer periods and even for a year or more preceding graduate training. Even after a year or more of postgraduate university training, the worker is likely to feel overwhelmed by the manifold problems to be met and frequently requires another

year of patient guidance in the field to "get down to earth."

Listed below are special areas of knowledge and skill considered desirable for professional competence in health education and for which provision is made in the usual public health training schedule at the university graduate level\*:

1. Education in personal and public health to provide a knowledge of:
  - a. Physiologic hygiene, including personal hygiene, nutrition, and mental hygiene (Content and methods of graduate instruction can be strengthened.)
  - b. Environmental sanitation
  - c. Basic principles in the organization and administration of public health
  - d. Methods of communicable disease control, including the nature of the causative organisms and methods of transmission
  - e. Public health statistics and principles of statistical reliability
  - f. Survey methods
  - g. Relative importance of health problems and mode of attack
2. Training in public administration to provide a knowledge of:
  - a. Governmental and community organization
  - b. Community agencies, their functions, aims and interests
  - c. Techniques for the successful interview and consultative conference (particularly in public school work)
  - d. The qualities of leadership, how to discover leaders and how to work with them
  - e. Group-work methods
  - f. Principles of planning
3. Training in special skills required in health education, to include ability in public speaking and the conduct of public meetings and knowledge of:
  - a. Methods and materials in health education, their possibilities and limitations
  - b. The evaluation of sources of material and information
  - c. How to write informative and friendly letters
  - d. How to compile bibliographies
  - e. Methods of filing and clipping
  - f. How to write and edit material for publication

- g. The nature of the printing and duplicating processes and their use
- h. How to distribute educational material effectively
  - i. The nature, preparation, and use of visual aids
  - j. Possibilities of community participation in the development of educational material
  - k. Press relations and techniques
  - l. Radio methods and techniques
  - m. Conference methods and techniques
  - n. How to organize and advertise meetings
4. Supervised field training

Carefully planned and supervised field experience or "internship" is regarded as an important element in the training process and in the development of skill and ability in health education.

Programs of professional study in health education can be offered best in those institutions which are providing professional education in other fields of public health, and which have available the required instructional facilities. The seminar, workshop, laboratory, and field work procedures are preferable to lecture methods for instruction in most subjects. To make this possible, however, adequate staffs are necessary, and they should include personnel with practical experience as well as teaching ability. Field training stations must be a fundamental part of the comprehensive plan.

The content and extent of the graduate work required of a candidate will vary according to the amount of undergraduate preparation and the intervals between undergraduate and graduate study and the quality and type of experience of the individual. Under ordinary circumstances, one year of graduate work is too brief a period in which to equip the average student being recruited today for this important task. Judgment and maturity as well as technical knowledge are essential. If one were to enter upon a program of planned study in the first year of university life, this essential training would be strengthened, although an interval of at least a year of practical experience

\* Essentially as outlined by the Committee on Professional Education, American Public Health Association.

between undergraduate and graduate training should be seriously considered. The essential basic undergraduate preparation could be obtained by a four years' course leading to a Bachelor's degree with major emphasis upon:

1. The basic health-medical sciences
2. Education, with emphasis upon educational psychology
3. The social sciences

Only students with graduate instruction in the biological sciences relating to public health, or with three years of experience in public health, are qualified to complete the Master of Public Health work in one year. Otherwise, the basic work previously outlined for undergraduate instruction should be followed by a two year program of training at the graduate level to include comprehensive seminar and laboratory courses enlivened by field observations, enriched by contact with leaders in many fields of community activity, and made practical by administrative studies and actual participation in community programs under stimulating leadership. This leadership or guidance, however, can rarely be expected from a health agency or group of agencies unless supplementary supervisory personnel has been provided to assist the regular health department personnel already fully occupied with routine duties. This applies even to organizations which,

with foresight, have provided for necessary in-service training of their regular staffs.

Finally, it is not only necessary to study needs and resources to determine the nature of the training program required, but it is essential to check results. We need to see our objective clearly; we need techniques and tools to convey the truth (facts) with brevity and timeliness. Training and teamwork are necessary, coupled with continuing appraisal of methods and materials, and evaluation periodically of procedures used in pre-service and in-service training programs. To facilitate coöperative planning and united action, representatives of the various groups concerned should arrange for a series of conferences and studies under appropriate auspices (possibly the Committee on Professional Education of the American Public Health Association coöperating with the U. S. Public Health Service and the State and Provincial Health Authorities) designed to throw more light on the present situation as a basis for planning for the future.

#### REFERENCES

1. Derryberry, Mayhew. Health Education in the Public Health Program. *Pub. Health Rep.*, 62:47 (Nov. 23), 1945.
2. *New York Times*, Magazine Section, Nov. 25, 1945.
3. Hull, Albert W. *Science*, 101:2616 (Feb. 16), 1945.

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## Sports Equipment Wanted

The National Council of the YMCA asks for help in collecting sports equipment for devastated countries, particularly Poland and the Philippines. All sorts of sports equipment and clothing

are desperately needed—balls of all kinds, gymnasium equipment, sports wear. Send goods to your local YMCA where it is packed and shipped to receiving depots on the east and west coasts.

# Problems of Recruitment and Training\*

JAMES G. STONE, F.A.P.H.A.

*Director, Program Development, National Tuberculosis Association,  
New York, N. Y.*

PROBLEMS of personnel have been accentuated in recent years. This accentuation has been felt in the voluntary association as well as in the official agency. In fact, it is merely a reflection of the total problem of personnel that has been affecting all organizations in all fields of activity. I use the term "accentuation" advisedly, because at all times there are certain problems of personnel, whether recognized or not. When the problem becomes acute it is certain to receive the attention that it needs.

In the voluntary associations, to which my experience has been limited, these recent problems in personnel have not been restricted to any one type of employee but have included administrative workers, nurses, statisticians, health educators, public relations personnel, and the many workers with special skills in the field of rehabilitation.

The immediate problem of personnel today is generally one of finding an adequate number of workers with adequate training, or of providing them with training. It is possible that the causes of these problems and some of the solutions may be common to the voluntary agency as well as to the official agency. The most frequently mentioned cause of personnel problems today is the war. The war has created personnel problems for two reasons. One of these is that a large number of

vacancies have been created because personnel have entered military service. Another cause of the shortage of personnel has been that some workers, particularly those in some of the somewhat lower paying positions, have left the field of public health for what they term "more attractive" jobs.

Linked closely with these war-induced vacancies is the fact that the recent military demands for man power have also dried up some of our normal sources of new personnel. Another definite cause of the existing shortage of personnel is the general inadequacy of any previously existing program for recruiting and training. In many of the voluntary agencies, at least, there has not been any real program for recruiting in the past. The greatest number of vacancies that have occurred were caused by retirement or death. These vacancies followed a rather normal curve and were not too alarming. As a result, while certain efforts were carried on to enlist the interest of new workers, seldom were these efforts related to a known need or a planned rate of recruitment. A final cause of some of the personnel problems in the voluntary agencies in recent years has been the increase in income which in turn has created some new organizations and many new positions. In the tuberculosis field alone our income has come up from approximately \$6,000,000 in 1940 to nearly \$15,000,000 in 1944.

If an adequate job is to be done in the field of recruitment we must first make a study of what we have to offer. A study of what we have to offer should

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include a careful analysis of all phases of employment in the agency or in the field concerned. If during the war we lost certain workers for "more attractive" jobs, we must find out what was unattractive in our jobs. We must see that our working conditions are comparable to those of other agencies in the public health field and also to those of other organizations in the community.

We must explore the opportunities for advancement in our field. We must see that our salaries are comparable to those for other positions requiring an equivalent amount of education and experience. There should be a reasonable opportunity for an alert individual to advance. This opportunity for advancement should exist within the organization in which he is employed; and if by the very nature of things the opportunity for advancement within his own organization is limited, there must be an opportunity for him to advance in other communities if the employee wishes to change his location. To do this requires that we establish certain objective, regular methods of evaluating the performance of an employee to insure that increases in salary, increases in responsibility, and change of location are secured by virtue of ability and not on the basis of personal relationships alone.

For an individual who wishes to make this field his life work, there should be opportunity for retirement at some stated age. His opportunity for retirement should not be too greatly jeopardized by an occasional change of location which brings with it certain advancement.

If in any organization our study of these factors of actual employment reveals weaknesses and situations that are less attractive than elsewhere, the administrative machinery of our organization should be utilized to correct these conditions. Information such as that just enumerated must be available in a

sound job of recruitment, because much of that information will be desired by persons who might be interested in our field of endeavor and we must have an accurate picture based on facts to give.

It has been frequently mentioned that civil service requirements at times place legal residential restrictions on the employment of new personnel. Such residential restrictions are not confined to the official health agency. Local boards of voluntary agencies unfortunately are at times just as restrictive in their requirements. Too often they too prefer a home-town boy as the first qualification, with training and merit as a secondary consideration.

It has been said that the voluntary association has at times set the pattern and led the way for official agencies. In regard to employing personnel, the voluntary association has a great responsibility to do a far better job than ever before in making appointments on merit alone. This is a job that requires education of both staff members and local boards of directors.

An adequate job of recruitment must also be built upon factual knowledge of the number and type of positions open, and the probable rate of replacement necessary for these positions.

The National Tuberculosis Association at the present time is engaged in a survey of the professional workers in its field. We are attempting to find out the number of workers employed in each agency, the number of executive secretaries, of health educators, of statisticians, of rehabilitation workers, and of each other type of employee. We are learning the age of each of these employees, and from this we hope to be able to plot a reasonable curve as to what our normal rate of replacement shall be, and whether these replacements are now available, or how many we should recruit and train annually.

In our study we are also attempting to secure a clear definition of the duties



required in each position. It is somewhat difficult in an organization such as the tuberculosis association to have completely uniform definitions for the duties of, say, a health educator in all sizes of associations. The duties in a large association vary considerably from those in a small association. However, with a clear definition of the duties in each position, it is then possible to establish practical definitions of the qualifications essential for adequate fulfillment of the duties of the position.

Our experience shows that too many local associations are not clear in their definitions of the duties to be performed or of the qualifications to be required, and occasionally we find an organization that may be clear in these duties and qualifications but extremely unrealistic in its establishment of the salary range for the job.

At the conclusion of this study we in the National Tuberculosis Association expect to be in a much better position to determine the number and types of workers, and the duties and qualifications required. In this study we are also attempting to determine the probable number of new positions to be created within the next five years. I cite this merely as an example of the type of approach that is needed to establish an adequate program of recruitment. Without such a study our recruitment program may be inadequate or may possibly be so large as to develop a pool so great that the workers go begging. If this latter should happen it would doubtless set back any future programs of recruitment.

As far as recruiting itself is concerned, it is not enough to do what has often been done in the past, that is, look to schools of public health for new workers. If every health organization limits its recruiting to schools of public health it will only invite competition between agencies and result in inflation in salaries.

It would seem somewhat logical to start a program of recruiting on the high school level. This could be done with the purpose of familiarizing the students with opportunities in the field of public health and giving them some rather broad and rather general indication of the possible educational requirements. Many teen-age youngsters are groping around for their life work. They know something about law, something about medicine itself, something about advertising, about journalism, and so on, but generally they know very little about the field of public health as such.

Such a program of advance recruitment would be extremely welcome to high school administrators. Our association recently prepared a brief folder<sup>1</sup> describing opportunities in this field and certain educational background required. This was not designed for high school use but has been requested by a considerable number of high school counselors and administrators. Such a leaflet should probably be prepared by an organization like the American Public Health Association to cover the entire field of public health,<sup>2</sup> and should be written for high school youngsters.

In addition to such recruitment, it is necessary to carry on activities at the college level. Recruitment at this level can have two very definite objectives. One is to direct college students into postgraduate study in the field of public health. Some students may also be directed to schools of social work, some of the skills of which are required in certain positions in public health. A second phase of recruitment on the college level can be to secure a certain number of workers for positions now available in the field of public health. In any organization there are a number of subordinate positions which can be adequately filled without graduate education. These workers can be secured

and given immediate orientation and training on the job. They will return to the employing organization good dividends if the training and original selection are adequate.

Returning veterans are another productive source for recruitment. Many of these young men and women have been exposed to experiences which have stimulated their interest in possible opportunities for work in the field of public health. They can and should be approached through employment counselors in the armed services.

Consideration should also be given to recruiting from certain allied fields in which skills exist which are useful in public health work. Among these are the fields of education and social work.

A program of recruiting is not without its headaches. For each broadside on recruiting that is distributed, a certain number of "squirrels" will respond. When this program is undertaken there should be someone in the organization capable by temperament, training and experience, and allowed sufficient time to interview and counsel. Sometimes even the "squirrels" have good points and should be directed into proper channels. Through this counseling it can be determined in many instances which of the young people should secure additional education and which ones would not profit by it.

However, it is seldom that recruiting as an activity in itself will bring to the employing organization a polished worker immediately ready to go to work and to produce on the job. The only way we can get such workers is by promotion or by enticement away from current employers. Seldom does even a graduate of a school of public health who has not had definite experience on a job possess skill and know-how to start producing immediately upon employment; and, as a result, additional training may be necessary.

In our survey on personnel in our

own field, we have asked the professional workers to state what shortcomings in education they felt when they first entered the field. It is interesting to note that even graduates of schools of public health are aware of definite lacks on getting into a job. Among educational lacks of graduates of schools of public health we find listed such things as public speaking, business letter writing, community organization, educational or teaching procedures, office administration, news writing, methods of working with committees, and sociology. These are included as educational lacks in questionnaires submitted by executive secretaries and directors of health education.

It would seem that possibly the schools of public health might give consideration to the matter of adding to their curricula courses on certain specific skills and techniques that may be needed more by the workers in the voluntary associations than by the workers in the official health department. Until that time comes, however, and perhaps even after, certain additional training may be necessary for any new worker coming on the staff.

For the very small organization this training may be assumed fairly easily. The staff is small, the relationship to the top is intimate and frequent. Through that contact the new worker quickly, although informally and possibly without plan, becomes trained in the responsibilities and functioning of his specific position.

The large organization can assume this responsibility of training through a carefully planned program of apprenticeship. This will require, of course, a full-time qualified director of personnel or training who will serve as the direct tutor of the individual workers, with department heads and other specialists contributing their due share through arranged conferences.

It seems important in any such train-

ing, even where the worker is being trained for a specific job, that he be given a thorough understanding of his place in the total organization and of the responsibilities and problems of other workers in other departments. Such a training program should, in our opinion, be one of apprenticeship rather than didactic teaching. Presumably the new worker has certain required academic preparation—certainly without this preparation he should not be employed. What this worker lacks is experience and know-how; and possibly the ideal is to give carefully supervised experience under a tutor who can coach and correct. His experience, however, should be definitely part of the general functioning and operation of the organization. Merely homework assignments will not fulfil the function of experience.

Possibly the most difficult job of training is that faced by an organization that is neither very small nor very large. Such an organization may have a chief and several departments of one worker each. Each of these department heads demands time of the chief. Each one is enmeshed in many responsibilities. Supervision and training for a new worker is difficult and time-consuming for such a staff and may not be possible without jeopardizing the regular activities.

For organizations of this size it may be preferable for some parent body to assume a certain share of the responsibilities for training. Under such a plan it is possible to assign an apprentice to such an organization. With that organization he would secure definite experience along previously determined lines. The local organization itself would not be given the responsibility of seeing that the apprentice absorbed all of the education possible through the experience. This responsibility could be placed upon the parent organization, which would go over the experience with the apprentice upon his return from the assignment to

see that he had profited from it in the greatest possible degree.

Another type of training program is now being considered by the National Tuberculosis Association. We are considering a fairly extensive program of recruitment, concentrated probably at the college level. This recruitment program would bring workers into the organization for a short period of orientation—probably two to four months. During this period of orientation there would be a small amount of essential didactic teaching on techniques and policies. This would be followed by certain apprenticeship training. During this training and during these months we hope it may be possible to determine which workers are capable of showing real progress in public health work. It may then be possible to have these better candidates obtain added education in a school of public health, which again would be followed by another short period of apprenticeship training.

It is important in every organization, large or small, that there be some one person responsible for problems of personnel. This one person should have the responsibility of watching the new workers, seeing how they develop on the new job, and helping to make such adjustments in training and assignments for each worker as will make for the greatest possible growth within his capabilities. It is necessary that there be a continuous program of institutes, conferences, and meetings so that each worker, both new and old, may continually see his relation to the entire organization and gain the greatest possible growth for his own benefit and the benefit of his organization.

#### REFERENCES

1. National Tuberculosis Association. *An Invitation*, 1945, 7 pp.
2. Committee on Professional Education, A.P.H.A. *Public Health—A Career with a Future*, 1946. In press.

## Accident Prevention \*

D. B. ARMSTRONG, M.D., F.A.P.H.A., AND W. GRAHAM COLE

*Second Vice-President; and Assistant Secretary, Metropolitan Life Insurance Company, New York, N. Y.*

PEACE has ended premeditated killing on the battle front, but it has not ended unintentional killing, by accident, on the home front. . . . It is unthinkable that the nation will lose the war against accidents after winning the war against the Axis. This must not and shall not happen."

This excerpt from a letter written by the President of the United States less than a month after V-J Day, to the President of the National Safety Council, clearly expresses the need for a "new emphasis" on the accident prevention phase of public health.

During the war against the Axis, from Pearl Harbor to V-J Day, American casualties resulted in approximately 262,000 fatalities, according to the August, 1945, report of the National Safety Council. During the same period, accidents on the home front resulted in 355,000 fatalities. Our total war casualties, including killed, wounded, missing, and prisoners, amounted to 1,071,000. Permanent disabilities alone on the home front from accidental causes amounted to 1,250,000.

Although the population exposure among civilians at home was many times greater than that among the armed forces, the figures just quoted do emphasize the importance of accidents as a cause of mortality and morbidity and stress the need of a continuing war against accidents on the home front.

This war must be waged in several "theaters" simultaneously. It must be planned to prevent accidents incidental to occupational pursuits, accidents resulting from the operation of motor vehicles, accidents in public places, and, of major importance, accidents occurring within the homes of our citizens.

For a number of years organized accident prevention activities have been carried on in the first three of these "theaters." In many instances these activities have received the support and active participation of official as well as nonofficial agencies, including, for example, federal and state labor departments, state motor vehicle departments, state and city police departments, etc. In the "theater" of home safety, however, there has been, until very recently, little if any coördinated program and only a small amount of active participation on the part of official agencies.

As all accidents, including those classified as motor vehicle, occupational, public, and home, now represent the *fifth* cause of death, the prevention of all types of accidents is a natural and direct responsibility of official and non-official public health agencies. The lack of organized effort against home accidents and the close relationship which public health agencies have to the individual in his home environment, would seem to indicate that the prevention of home accidents warrants the specific attention of public health forces. The reasonableness of this concept is borne out by the fact that home accidents alone represent the *ninth* cause of death among our population.

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This high rank as a cause of death exists today notwithstanding the fact that the death rate for home accidents, as indicated by the industrial experience of the Metropolitan Life Insurance Company, has shown a downward trend during the past ten years. Undoubtedly this downward trend has been largely due to generally improved living conditions and the modernization of home equipment. It should be noted that the trend was interrupted in age groups 1 to 14 during the war years, 1942-1944, when in many instances usual adult supervision was decreased as a result of war activities.

The present importance of home accidents as a cause of mortality and morbidity can be emphasized by the fact that during the war period nearly one-half as many persons were killed in home accidents as were killed by enemy action, and more than twenty times as many were injured.

The American Public Health Association, recognizing the need of further emphasis in the accident prevention fields, and particularly the home accident field, two years ago appointed a Subcommittee on Accident Prevention of the Committee on Administrative Practice. This subcommittee in 1944 issued a brief review of the home safety activities being conducted on a state level. This statement was published in the *Spotlight*, January, 1944. It reviewed briefly the work in several states, in two of which, namely, New York and Kansas, the State Departments of Health had assumed the leadership in the home safety programs. It also called attention to the fact that the State Department of Health of New Jersey was a member of the State Home and Farm Safety Committee. The organization of this committee was encouraged by the Newark Safety Council. It is composed of representatives of several state departments, including labor, agriculture, and public

information; and of several nonofficial educational groups. The State Health Department of Minnesota is cooperating with the Minnesota Safety Council.

Early in 1944 questionnaires were sent to approximately 300 state, county, and city health departments requesting an outline of past and present activities in the field of accident prevention. The replies to these inquiries indicated that health departments on the whole could at that time report very little in the way of actual or contemplated studies in the home accident field; that some casual educational work was being undertaken, generally in cooperation with other agencies; but that there was considerable awareness of the importance of the field and the logic of health department participation in it.

Based upon this preliminary survey, the Subcommittee on Accident Prevention developed a program for consideration by state and city health officials, planned to emphasize the importance of considering accident prevention as an essential public health service. This program was published in the March, 1945, issue of the *American Journal of Public Health*, and reprints were distributed to health officers, public health groups, and local safety councils.

The program stressed the need of leadership on the part of the health department in the field of home safety, but recognized that the extent to which the department can specialize in accident prevention activities bears a relation to the size of the community and to the diversity of organization within the department. It called attention, however, to the opportunity to integrate the home safety program with current educational and other activities of the official public health agency.

To illustrate the practical application of the program, it was supplemented by a list of suggested home safety activities, indicating the possible administrative or bureau responsibility for each. A brief

summary of suggested activities follows.

The health officer is in a position to arrange for the collection, analysis, and study of home accident statistics to determine the need of preventive measures in his area. He is also in a position to survey the existing home safety educational work of his community to ascertain the need of additional activities in this field. Based upon these studies he may wish to develop and prepare a program within the department; to take the initiative in developing coöperative relationships with other departments of the city government such as welfare, housing, sanitation, fire, building inspection, etc.; and to encourage related activities of nonofficial organizations, including medical societies, nursing organizations, safety groups, etc. If conditions warrant, the health officer might wish to consider the advisability of appointing a full- or part-time safety adviser to represent the department in community activities and to coördinate the safety work of the various bureaus. In addition, the health officer is in a position to include information regarding home accidents and their prevention in regular news releases and other publicity media.

In a study of the home accident field, the need of additional factual data regarding causes and other factors pertaining to the problem is apparent. The bureau of vital statistics is usually in a position to undertake the collection and analysis of these data. The National Safety Council at the request of the Subcommittee on Accident Prevention of the American Public Health Association prepared a four page leaflet entitled "Get the Facts About Home Accidents." This leaflet suggested methods of obtaining these data, including a suggested "Confidential Home Accident Fatality Report." It also described in detail the method of analyzing information for use in developing preventive activities.

The organized health department is in a strategic position to undertake direct educational activities in the homes of the community through staff nurses and visiting nurse organizations. It is suggested, therefore, that the department, through its nursing bureau, arrange for an in-service training course in home safety for its nursing personnel. This course will provide an opportunity to invite other public health nurses in the area to attend. During the course representatives of the nursing bureau may be instructed to submit detailed reports on home accidents coming to their attention; to report on unsafe conditions noted in home premises; and to integrate home safety education with health education in their family contacts.

Through the sanitary inspection bureau an opportunity also exists to determine unsafe conditions in home premises in order that emergency conditions may be reported to proper authorities and in order that unsafe home conditions may be considered in conjunction with housing and health projects. It is suggested that consideration be given to an in-service home safety course for members of the sanitary inspection bureau.

The health education bureau is usually in a position to integrate home safety education with health education wherever practical in connection with the regular activities of the bureau. This may include the distribution of booklets, posters, etc., and a study of the possibilities of additional home safety activities.

Through clinics and other means, the maternal and child health bureau can teach mothers the safe methods of handling infants and younger children. This bureau also has the opportunity to make a special study of accident hazards in the younger age groups.

Through the food and drug control bureau or unit of the department, it is suggested that a study be made of the

use, labeling, and storage of poisonous materials in homes, and that consideration be given to the need of additional regulations and educational material on this subject.

It is a fact that more accidents occur to occupationally employed persons while they are not engaged in their regular work than occur "on the job." A relatively high percentage of these "off-the-job" accidents occur in the homes. Through the industrial hygiene bureau, therefore, employers of labor can be encouraged to supplement their industrial accident prevention programs with activities designed to encourage interest in the prevention of home accidents.

Through the housing bureau, architects, builders, and others can be encouraged to study accident as well as health hazards in the various types of local dwellings. This bureau may also be in a position to suggest necessary legislative action relative to the development of safety factors in homes.

The study of home accident hazards in boarding houses, day nurseries, etc., and the development of legal or educational plans to combat these hazards may prove to be a proper function of the bureau responsible for the licensing of such facilities.

A recent report from the National Safety Council indicates that in addition to the leadership developed by the state departments of New York and Kansas, similar departments of Wisconsin and Tennessee have published occasional material on the subject of home safety. In a number of states the department of health is coöperating with state or local safety councils. This group includes, Iowa, Ohio, Utah, and Indiana. It also includes Minnesota where the state department is coöperating with the Minnesota Safety Council; New Jersey where coöperation is extended through the Newark Safety Council; Kentucky through the Louis-

ville Safety Council; and in Atlanta through the American Red Cross. The Safety Council report also indicates that 24 state departments of health are regularly furnishing statistics on home accidental deaths to the Council.

The possibilities of home safety activities on the part of a state department of health may be illustrated by the program developed and being conducted under the auspices of the Division of Public Health Education of the New York State Department of Health. This division has organized an Advisory Committee on Home and Farm Safety. Under this Advisory Committee several subcommittees dealing with various subjects have been created. These include committees on household safety, safety in housing, farm safety, and off-the-job safety. Several action committees have also been organized, including youth instruction to encourage activities among youth organizations; adult instruction, composed largely of representatives of women's clubs, parent teachers associations, service group, etc.; personal health and safety, composed largely of physicians. In addition, committees on research, legislation, and finance have been organized.

Publications pertaining to these various fields of interest have been issued. For example, a booklet, *Prevent That Accident*, was developed as the result of the Household Safety Committee. A *Home Safety Manual for Public Health Nurses* and a handbook for physicians have been issued. At the present time a handbook for architects dealing with factors of safety in the new or remodeled home is on the press. The division also contemplates the publication of a handbook for home economists and one for women in physical education. At the request of the division, the National Safety Council published a leaflet, *Thank You Mr. Executive*. This dealt with off-the-job

safety and is being distributed by the Health Department to industrial organizations in the state. A brochure, *Stop Farm Accidents*, has been given wide distribution through the State Grange and other farm groups. In addition, posters are issued and items pertaining to the home safety program appear frequently in *Health News*, the official organ of the department.

The Division of Public Health Education, in coöperation with the Advisory Committee on Home and Farm Safety, is conducting rather extensive field work. Conferences have been held in connection with meetings of state-wide organizations such as the New York State Farm Bureau, the Home Bureau, and the 4 H Clubs, as well as with local community organizations, women's clubs, etc. Several Home and Farm Safety Institutes have been held throughout the state. The first of these was conducted at Ithaca under the sponsorship of the New York State College of Home Economics. A unique type of demonstration on household skills is presented as a part of these institutes. It has also been presented frequently at conferences and local meetings of various organizations throughout the state. Through the medium of display spaces at county fairs, large numbers of individuals have been reached. At the Wayne County Fair held in Palmyra last summer, 40,000 persons viewed the home and farm safety displays. Exhibits, films, and demonstrations are offered at many of these county fairs and pamphlets are judiciously distributed.

The Department of Health in New York City has demonstrated how home safety can be integrated with the regular activities of a city department. To acquaint their personnel with home safety problems, an in-service training course was conducted among the health educators, nursing personnel, and inspectors. This course was given in each

of twenty health districts of the city. It consisted of ten sessions of an hour and a half duration. The course was conducted with the coöperation of the National Safety Council and the Greater New York Safety Council. Each session was presided over by the respective health officer, and the subject material was presented by a competent authority or authorities in the field. For example, the subject of fire prevention in the home was presented by representatives of the city fire department; the prevention of accidents incident to the use of gas, electricity, etc., was presented by a team representative of the local utilities. Sessions were conducted on a conference basis and demonstration material was utilized wherever practical.

Following the in-service training course, practical community-wide home safety demonstrations were planned and are being conducted in two health districts in the city. It is hoped that the experience developed during this project will shortly be made available to other health and safety agencies throughout the country.

As a further indication of the newer emphasis which is being placed on the subject of home safety in the public health and related fields, attention should be called to the joint project being developed by the National Safety Council, the American Red Cross, the American Public Health Association, and many other agencies. An initial statement regarding this project entitled "A Man's Castle," is now available. The committee conducting this project with the aid of the staff of the National Safety Council has made a study of home safety activities being conducted in various communities. A National Conference on Home Safety has been set up on a continuing basis to aid in correlating the activities of interested organizations in an effective nation-wide effort to reduce home accidents.



It is the sincere hope of the Committee on Accident Prevention of the A.P.H.A. that the program just summarized will prove useful to organized public health groups and will serve to

stimulate additional activities in this field. The committee will continue to keep in touch with and report on such activities and will welcome inquiries and requests for further information.

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## New York State Medical Society Favors Establishment of County Health Departments

A resolution urging the voluntary establishment and maintenance of County Health Departments throughout the state was adopted by the House of Delegates of the Medical Society of the State of New York at the recent 140th Annual Meeting of the Society in New York City. The action took into consideration recent legislation increasing state aid for such departments. The text of the resolution follows:

WHEREAS, the Medical Society of the State of New York is cognizant of the limitations of public health service under part-time health organizations such as now exist in most townships, villages and small cities of the State, and,

WHEREAS, the State of New York after January 1, 1947, through increased state financial assistance to counties will make it increasingly advantageous for counties to establish and maintain modern health services

by organizing a county health department staffed by full-time professionally trained medical and auxiliary personnel on a merit system basis and at the same time permit the retention of local part-time health officers able to demonstrate their value as a part of a county-wide organization, and, WHEREAS, this Society approved on May 9, 1927, the county health department form of organization and subsequently reaffirmed said approval,

WHEREAS, the House of Delegates of the American Medical Association on June 10, 1942, passed a resolution urging the establishment of full-time modern health services to provide complete coverage of the nation's area and population,

BE IT RESOLVED, that the House of Delegates of the Medical Society of the State of New York urge the voluntary establishment and maintenance of county health departments throughout the state at the earliest possible date in order that the existing deficiency in public health administration be corrected.

# Practical Aspects of Communicable Disease Control in the Schools\*

SAMUEL FRANT, M.D.

*Deputy Commissioner, City Department of Health, New York, N. Y.*

THE problem of the transmission of disease from one child to another while at school has always been an important aspect of the school health service. In recent years this problem has diminished in importance, first, because of changes in the natural history of some of these diseases (for example, scarlet fever with its lessened virulence); second, because of the effectiveness of modern immunization procedures; and, third, because of the growing importance of other phases of the school health service, such as the detection and correction of mental and physical defects. Furthermore, there have been many changes in our knowledge of the epidemiology of the communicable diseases. As a result of these changes, radical modifications of our thinking regarding control have developed, and public health thinking must be interpreted properly to parents and teachers.

In the early days some of you will probably remember inspection of long lines of children by a physician every morning for evidence of contagious disease. I can dimly remember what this inspection consisted of. The children filed past the physician with their mouths open and the palms of their hands upright, the idea being to eliminate quickly diphtheria or other throat infections and to look for evidence of late scarlet fever, such as peeling of the

hands. Suspicious cases of illness were sent home immediately and not allowed to return to school until long periods of isolation had elapsed. In many instances the brothers and sisters were also sent home and kept at home for even longer periods than the affected children.

I suppose that 40 or 50 years ago, when both diphtheria and scarlet fever were considerably more virulent than they are today and when diphtheria was a very common disease, this rapid screening may have been justifiable. Today, however, at least in New York City, it has seemed to us that handling of the whole problem must be considerably modified.

Let us take, for example, the so-called minor communicable diseases of childhood. These consist of chicken pox, mumps, whooping cough, and measles. The average school child who has not yet had any one of these diseases is probably better off to have the disease when he is of school age than at any other time. Susceptibility to these diseases is variable but, in general, exposure in the age group from 5 to 10 years will give an attack which is of little or no danger to the normal child, and then lifelong immunity; or result in subclinical infection with enough immunity to produce the same result.

In the case of measles, if the date of exposure is known, we have in gamma globulin an agent which can allow the child to have an attack of the disease or receive immunity and at the same time run practically no risk.

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In the case of German measles, with the recent evidence that an attack in the first few months of pregnancy may cause permanent and serious damage to the baby, it is probably very important that all girls get their attack or be exposed, and in one or the other way receive immunity well before the child-bearing period begins.

In the case of mumps, the complication that is of the greatest importance, namely involvement of the testes and to a much lesser extent of the ovaries, occurs only after puberty. If the young school child has mumps before puberty and thereby becomes immune, obviously the most important complication has been avoided.

Susceptibility to whooping cough is on a much lower level and not many school children exposed to whooping cough in the school will catch the disease. Furthermore, the school child with whooping cough is not so likely to have a dangerous attack as a younger child. Perhaps widespread whooping cough vaccination in infancy and booster doses will take care of most of the problem of whooping cough in the near future.

The entire concept of scarlet fever has undergone change recently. It is now well established that scarlet fever is but one of the streptococcal diseases and differs from the ordinary streptococcal sore throat only in the presence of a rash. The rash is due to the inability of the individual to withstand the erythrogenic property of the particular streptococcus which is responsible for his infection. Another person infected with the same strain of streptococcus may have all the symptoms except the rash. He had no rash because he is immune to the erythrogenic factor in that streptococcus. It has seemed rather unscientific that, in the case of the patient just mentioned, with the rash, there should be stringent measures of isolation and even more stringent measures of quarantine of contacts, as

has only recently been the procedure in practically all health jurisdictions, while in the case of the individual with all the symptoms and the same potentialities for infecting others, just because no rash is present, restrictive measures are nonexistent.

Certainly in the light of our present knowledge, all types of streptococcal throat infections should be treated alike. The majority of these infections, including scarlet fever, run their course at the present time in a week, and the streptococcus responsible for the disease in many cases is completely absent or is so reduced as to be negligible as soon as recovery takes place. There are probably many more carriers of virulent hemolytic streptococci present in the general population than there are streptococcal sore throat and scarlet fever convalescents. Strict isolation of these until bacteriologically negative would be unsound when the large number of symptomless carriers known to be present in the community are allowed complete liberty. Because of this change in our understanding of the problem of scarlet fever, in New York City at the present time we have reduced the isolation period in cases with no septic complications to the duration of the acute stage, the minimum period being 7 days. This same isolation period now holds for all streptococcal throat infections and is probably a beginning in the right direction. Contacts are no longer excluded from school. In the year which has elapsed since this new regulation has been in effect, no increase in morbidity or mortality from scarlet fever has been noted.

In the case of diphtheria, the problem has become much simpler. We no longer have outbreaks of the disease; in fact, even single cases are uncommon. The immunization of babies and re-immunization by booster doses have all but eliminated this terrible disease from New York. There are, however, some

reservations to a policy of too great optimism. Diphtheria has become an important problem in Europe during the war years and appears to be less amenable to antitoxin once it develops. This has not been the case in this country, but we must continue our persistent efforts at mass immunization of the pre-school population if we want to maintain our good record.

Of the other major communicable diseases, little concern need be given to smallpox. In fact, since 1922, no New York City infected case has occurred. As regards the infectious diseases of the central nervous system, meningococcus meningitis and acute anterior poliomyelitis, we know that there are many more carriers of the responsible organisms than there are cases. No scientific investigator believes that restriction of the movements of contacts to clinical cases of these diseases has any material effect upon their spread. Accordingly, New York City does not exclude from schools children in whose households a case of either meningitis or poliomyelitis occurs. And since spread of infection from typhoid and paratyphoid fevers is mainly through the gastrointestinal tract, it has never seemed advisable to exclude contacts to these diseases from school.

Always present in the school population are cases of conjunctivitis, pediculosis, impetigo, scabies, Vincent's infection, and ringworm. In all instances of these diseases the children should be excluded from school until recovered or non-infectious. This procedure is fairly simple, except in the case of ringworm of the scalp. You probably are aware that there have been reports of infection with *Microsporon audouini* in school children in a great many cities, particularly Philadelphia, Columbus, San Francisco, Los Angeles, and Cleveland. In addition, in the metropolitan area there have been many cases in Jersey City and Newark. In New York City about

three years ago we had two well defined foci, one in the Astoria district in Queens and the other in Central Harlem in Manhattan. The condition was first discovered by noting an increase in clinical cases, and then, as soon as we did surveys with the Wood light, rather startling figures were obtained, indicating that in these two districts several schools had at least 10 per cent apparent and non-apparent infections.

In order to determine the extent of the problem, the Department of Health bought additional Wood lights and started surveying children in all schools throughout the city. Through June 22, 1945, out of almost one million school children, we examined 630,000 and found 4,000 infected. The procedures instituted to control the infection have been as follows:

1. Exclusion from school of all children with ringworm of the scalp.
2. Reference of these children to a proper treatment agency. Such agency is either the private physician, if he has facilities for treatment, or a clinic with such facilities. Arrangements have been made with several such clinics in the city to accept children referred to them.
3. Follow-up of children under treatment agencies to insure that treatment is effective and complete.
4. Frequent resurveying of epidemic schools to discover additional cases at the earliest possible moment.
5. Reexamination with the Wood light of excluded children who have been treated before return to school, and for checking of suspicious cases.

In addition, parents have been instructed by treatment agencies in precautions necessary to prevent spread of the infection from infected children to others in the family. These precautions include having the infected child sleep in a separate bed, individual use of toilet articles, proper care of the scalp, etc. Children with ringworm of the scalp are not permitted to visit barber shops, and barbers and beauty parlor operators have had the condition called to their attention.

The consensus of opinion of a group of dermatologists called together to consider the problem was that infections with *Microsporon audouinii* could be properly treated only by x-ray epilation and, in accordance with this opinion, the county medical societies within the city sent out letters to all members calling attention to the outbreak and giving the opinion of dermatologists regarding proper treatment.

At the present time the situation in New York City has become very favorable. Repeat surveys indicate that schools have infection rates varying from no cases at all to a little over 2 per cent. Accordingly, we have discontinued mass surveying and are limiting our control efforts to schools where clinical cases are discovered.

Looming on the horizon are newer

methods of control of communicable disease, control by physical means. In several parts of the East studies are now being carried out to determine the effect of ultra-violet irradiation of the air on the incidence of respiratory disorders. Aerosols are receiving consideration, and most recently the use of oil on the floors of hospitals has been shown to be of advantage in reducing the bacterial population of the air. Perhaps the schoolroom of the future will have all of these measures. There may be concealed ultra-violet lighting, diffusion through the air-conditioning system of germicidal aerosols and invisible coating of oil on the floors, walls and furniture. At any rate, we can be sure of one thing: there will be changes in the way we take care of the common communicable diseases.

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## A.J.P.H. War Volumes Dispatched to War Areas

Readers of the *American Journal of Public Health* will recall that the Association has received donations of back numbers to be accumulated into volumes for libraries and other centers in war-torn areas. As a result of the generosity of our readers it has now been possible to make available several score of complete journals for the war years and these are being sent as rapidly as transportation facilities permit.

Earlier shipments which went to European points have been acknowledged with very keen appreciation. In many cases these were the first technical journals in medicine or public health which had reached the libraries in several years and they were read

with great interest. Particular appreciation has been received from France, The Netherlands, and China.

More recently, through the coöperation of the United Nations Relief and Rehabilitation Administration and Dr. Henry R. O'Brien of the U. S. Public Health Service staff attached to UNRRA, copies have been forwarded to Singapore, Batavia, Rangoon, Bangkok, Saigon, Hongkong, Kuala Lumpur and the Philippine Islands. These shipments were made through the Bureau of International Exchange of the Smithsonian Institution in Washington, D. C. The Association continues to receive shipments of back numbers of the *Journal* for this purpose.

# Developments in the Science of Nutrition during World War II\*.

C. G. KING, PH.D., F.A.P.H.A., AND OLE SALTHER, F.A.P.H.A.

*Scientific Director, and Executive Secretary, The Nutrition Foundation,  
New York, N. Y.*

IN our struggle to conserve human health during the war period few things have stood out more clearly than the need for good nutrition. It is no mere accident that the first major world-wide movement to get under way in building for the post-war years was the Hot Springs conference on nutrition, followed by the meeting of the Food and Agriculture Organization in Canada. We present some of the more striking developments that have come about within the war period.

First, in the field of clinical nutrition, there has been a sharp awakening to the fact that over the entire nation there are only a few physicians who have had sufficient training to be recognized professionally as specialists in nutrition. The Public Health Service, the Rockefeller Foundation, the Nutrition Foundation, and other agencies have provided assistance toward training physicians who can meet the new challenge. These specially trained men and women can, in turn, steadily raise the level of public service in our hospitals and clinics. Of perhaps greater importance, they can modernize medical education in regard to nutrition, as faculty members of our schools of medicine and public health.

Advances in biochemistry, physiology, and pathology, both in schools of agriculture and in schools of medicine, have

brought the science of nutrition to a point where medical and public health professional groups can extend formal recognition. One can cite with some satisfaction the relatively new developments in medical nutrition training and research at Harvard University, Columbia University, the University of Cincinnati, Washington University, Vanderbilt University, and Tulane University. In each case there is a strong team of physicians and biochemists at work, with essentially full-time programs of research and teaching in nutrition. These are but specific examples of a broad trend.

Second, there has been a very significant advance in developing techniques of appraising nutritional status. For example, with as little as two or three drops of blood from a fingertip, it is possible to measure accurately the concentrations of vitamin A and carotene, hemoglobin, phosphatase, plasma protein, and vitamin C.

Distinct headway has been made, too, in recognizing tissue changes that characterize the early and chronic stages of moderate nutritional deficiencies. Despite the disagreement in regard to details, those who are most active in the field are progressing steadily toward common agreement.

This development is important because it has advanced the recognition of faulty nutrition into a zone of everyday consideration. In this new zone nutrition is of concern to a large fraction of our population and therefore

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reaches broadly into public health training and medical practice.

The need for guidance, especially in feeding military personnel, led to distinct progress in such fields as the following:

1. Improved convalescent treatment of men subjected to liver injury. High protein diets and rest have been reported to shorten the convalescent period by 50 per cent after attacks of infectious hepatitis. Protein intakes in the range of 250 grams per day, with a low fat intake, have been widely adopted.

2. The importance of one of the newer and less stable members of the vitamin B complex has come to light very rapidly. Deficiency of folic acid has been rather clearly shown to be a factor in making the intestinal tract more subject to disease, and clinical tests have indicated its value in treating both sprue and certain types of anemia.

3. Other nutrition studies have demonstrated the importance of proper food in relation to optimal resistance to cold, to impaired night vision, to fatigue, and to excessive heat exposure. In the latter case, the most critical dietary item proved to be a generous water intake, with lesser importance attached to salt. In the latter case, optimal results were generally achieved by supplying the requisite amount at mealtime, incorporated in the food. An item of special interest in the high temperature studies was the degree to which many individuals can become acclimatized, including metabolic readjustments, within a few days. Early claims of basic changes in vitamin requirements to meet high environmental temperatures were not confirmed.

Strangely enough, the study of possible gains in tolerance of high temperatures as related to varying intakes of carbohydrates, fats, and proteins has provided little progress.

In the case of altitude tolerance studies, a clear-cut advantage was established, indicating a ceiling gain of roughly one-half mile, following a single meal relatively high in available carbohydrates.

4. Another aspect of a combined food and nutrition study that advanced rapidly during the past few years has been the study of nutrient losses during storage and preparation. Vitamin C had been studied fairly extensively in earlier years, but the new work demonstrated large losses also in members of the vitamin B group, notably thiamine and folic acid.

5. In the European theater repeated appraisals of mass feeding programs have been characterized by emphasizing the importance of potatoes, cereals, and green or yellow vegetables. This combination can evidently constitute a good sustaining diet, approaching optimal economy in terms of land usage and man power. Such a national dietary admittedly is monotonous and unattractive and it can be improved upon nutritionally but, on the whole, the results during long periods have been surprisingly good.

Another pattern of feeding was developed extensively in western Europe during the war; namely, a special provision for vulnerable groups, to supplement the above "iron ration" for civilians.

Pregnant and lactating women and small children were given special and often almost complete allocations of very limited high priority foods such as milk, eggs, and citrus fruit. In England especially the results of improved nutrition seem to have been reflected in a steady improvement in maternal and child health, despite the increased exposures and other stresses of the war. The British record adds supporting evidence to the reports published by Dr. Stuart and his associates of Harvard University, and by Dr. Tis-

dall and his associates of the University of Toronto.

It may be interesting to note that the Children's Bureau of the Department of Labor has recently announced the results of a comparative study of this country's birth rate from 1933 to 1943. This study shows that the infant mortality rate was cut 31 per cent, from 58 to 40 deaths per 1,000 live births.

It is too early to predict confidently what effect improvement in nutrition will have upon the current high incidence of dental caries in America and Western Europe. There is a considerable body of evidence to indicate that dental caries should be less severe as a result of increased intakes of vitamins A, C, D, and niacin, together with increased consumption of high quality proteins, calcium, and fluoride. Certainly the high percentage of rejections from military service during 1941 and 1942 because of bad teeth led to increased recognition of the problem. The following quotation from an army medical officer is enlightening:

Records reveal that at the beginning of the war, 9 out of every 100 selectees were rejected for one or more dental deficiencies. The only requirement for entrance into the Army was that there should be at least three serviceable, opposing, natural masticating teeth and three serviceable-opposing natural incisors. Dental defects were the leading cause for rejection, eye defects ranked second, mental and nervous defects third, and cardiovascular defects fourth.

The rejection of this large number of men necessitated the lowering of the dental requirements to meet the demands for induction and man power. Accordingly, the dental requirements were reduced in March, 1942, and again in October, 1942; since then approximately 1 selectee per 1,000 was rejected for dental deficiencies. Men can now qualify dentally for the Army who have two jaws.

Those who are especially interested in maternal and infant nutrition are looking forward to the series of papers by Drs. Hoobler and Maynard, and their associates, to be published soon

in the *American Journal of Diseases of Children*. These reports will give new and extensive information on the composition of human milk and cow's milk, together with careful estimates of infant and maternal nutritive requirements.

One of the important fields of nutrition deals with the interrelationships between different nutrients. For example, certain degrees of interplay between sodium and potassium and between calcium and phosphorus have been recognized for many years. Again, a degree of relationship between thiamin requirement and fat intake has been long recognized. The discovery of a reciprocal balance in requirement for the anti-pellagra vitamin and a specific amino acid, as shown in 1945 by Dr. Elvehjem at the University of Wisconsin, opens up a new area of exploration. Much practical interest attaches to the discovery, because it affords a definite basis for explaining two things that have long aroused much speculation: (1) the relation of corn consumption to pellagra, and (2) the curative or preventive action of high quality protein foods such as milk, even though these foods apparently did not contain large amounts of niacin.

One of the most difficult problems in nutrition is to evaluate the overall gains in health that might be achieved by intakes of specific nutrients in excess of the quantities that will protect the body against definite signs of deficiency. At Columbia University, Dr. H. C. Sherman has reported on a long series of experiments with rats, based upon different levels of vitamin A intake. The results demonstrated gains in health at levels well above those required for normal growth and freedom from specific signs of deficiency.

At Washington University, Dr. C. F. Cori has just reported a new path by which sugar can react when it is started on the way to being either burned or



converted to fat instead of being stored as starch. His work demonstrates for the first time in history a direct chemical basis for the function of two glandular hormones related to the use of sugar in the animal body. Dr. Cori's work goes a long way in giving a clearer picture of diabetes and related diseases. Hormones have been recognized for a long time as controlling agents in the body, but this is the first time that anyone has been able to demonstrate so accurately their method of functioning. In Dr. Cori's work we see the reactions of sugar regulated by an interplay of two hormones which act on the newly discovered catalyst, which is a crystalline protein.

The attention given to nutrition in World War II by the Office of the Quartermaster General and the Office of the Surgeon General stands in sharp contrast to experiences during World War I. Their problems involved keeping the soldier fit to fly at high altitude and speed; to perform complicated and precise tasks requiring delicate coördination; to fight in the tropics or the arctic; and to live on combat rations for days or weeks and months on end. The training and discipline in seeing that a soldier in World War II was not only well fed but properly fed will no doubt be reflected in the eating habits of the soldier as he returns to peacetime pursuits.

While not a development of the war, because it was conceived and organized before the war, a new form of research

organization has been developed during the war period for the purpose of providing basic information in the science of nutrition.

The Nutrition Foundation was founded by the food industry as an acknowledgment of their responsibilities in the protection and advancement of health through scientific progress in nutrition. The entire program is one of public service, and distinguished representatives of the public serve on the governing body. The quality and independence of the research program is safeguarded by the referee action and counsel of fifteen outstanding research scientists. The program is devoted to finding (1) what quantity of each of the 40 or more essential nutrients is required for good nutrition, (2) how each nutrient functions inside the body, (3) how each nutrient can be used to protect human and animal health, (4) how each nutrient can be measured accurately either as it functions in the body or as it comes into being on a farm and later takes its course through the channels of commerce to the ultimate consumer, and (5) education to facilitate the application of new and sound information.

In conclusion, it seems fair to suggest that the many recent practical gains toward protection of health by means of improvements in food intake will be followed by further gains in proportion to our advances in basic understanding of food composition and the function of foods inside the body.

# A Study of the Nutritional Status and Food Habits of Otomi Indians in the Mezquital Valley of Mexico\*

RICHMOND K. ANDERSON, M.D., JOSE CALVO, M.D.,  
GLORIA SERRANO, M.D., AND GEORGE C. PAYNE,  
M.D., F.A.P.H.A.

*School of Hygiene, Mexico, D. F.*

THIS is a report of a nutrition study in four Otomi Indian villages in the Mezquital Valley of Mexico, two of which were surveyed from October to December of 1943, and the others in March to September of 1944. The Mezquital Valley lies 60 to 120 miles to the north of Mexico City and is traversed by the Pan-American Highway. The four villages lie in the southern end of the valley about 75 miles from Mexico City. The people are predominantly Indian, although some mixture with white blood is apparent.

Most historians believe that the Otomi Indians were originally inhabitants of the valley of Mexico, the site of the present City of Mexico, but were driven into the surrounding areas by successive Indian invasions ending with that of the Aztecs. In the main they still cling to their native customs in spite of the Spanish influence dating back to the first half of the 16th century. Otomi is the chief language, although in the first two villages, close to a town of about 3,500 population,

nearly all spoke Spanish also. In the other two villages a large percentage of the population spoke only Otomi, and here the people were more ignorant and suspicious and their coöperation was more difficult to secure.

The altitude of the region is about 2,000 meters (approximately 6,500 ft.), and the climate temperate (average temperature, 1921-1935, 16.3° C., maximum 34.5°, minimum 5.5°). The area is exceedingly arid and essentially unsuitable for agriculture in the absence of irrigation. Parts of the valley are irrigated, but the villages studied were not significantly affected thereby. The average rainfall for the years 1921-1935 is given as 440 mm., with an average of 52 days in which rain exceeded 0.1 mm. Rarely is a fair crop obtained, although agriculture remains one of the chief occupations of the inhabitants. Prior to the present land movement it was a region of large ranches where, in the absence of irrigation, the chief industry was the production of pulque, the fermented juice of the "maguey" (century plant). When the large estates were subdivided most families acquired small plots on which they attempt to grow something, chiefly corn or beans, but the yield is usually extremely low. Pulque production is said to be diminishing since it is best adapted to large

\* The studies and observations on which this report is based were conducted under the auspices and with the support of the International Health Division of The Rockefeller Foundation in coöperation with the Ministry of Public Health and Welfare of Mexico and its subdivisions: the National Institute of Nutrition, the School of Hygiene, and the Training Center for the School of Hygiene.

scale production, but it is still important in the economy and nutrition of the people of the region. Another important occupation of the inhabitants is weaving the fiber of the maguey (agave). In the first two villages this is made into crude rugs or mats, in the others into coarse squares of cloth called "ayates," which are used chiefly for carrying purposes.

The people live in small, one-room, dirt-floored huts made of maguey leaves placed on a crude pole frame. These are quite permeable to the elements, even to rain. A few live in adobe or stone structures. The dwellings are low, blend with the landscape, are commonly concealed by a cluster of cacti or low trees, and are usually rather widely dispersed and often difficult to find. One might be in the center of a considerable settlement and yet consider himself in a region practically devoid of habitation.

Clothing is poor and meager, and the majority of persons possess a single garment which is used until worn out and infrequently washed. The worn clothing of parents is commonly passed on to the children. The poor personal hygiene of the people may be attributed largely to economic conditions, and to the scarcity of water. Each village usually possesses one or two wells, generally very deep, and considerable labor is expended in raising and transporting the water to the dwellings. Louse infestation is practically universal. In the first two villages infestation was 90 and 95 per cent, respectively, and most likely it was not less in the others. Typhus is endemic in the region, but no cases were seen in these villages at the time of the survey.

A record of family income and expenditure for food was kept for all families. Twenty-five per cent of these records were analyzed and showed an expenditure of only 6.68 pesos (equivalent to \$1.38) per week per family,

and 1.64 pesos (equivalent to \$.34) per week per person. This average is based on the market value of practically all food consumed with the exception of part of the pulque and of a variety of edible wild plants eaten to which no monetary value can be assigned. The pulque is usually produced by a few individuals, and sold to the rest of the village. However, many families tap a few maguey plants and produce a small amount for their own consumption. It should be emphasized that prices were extremely high for Mexico at the time of this survey, with corn, the predominant food item, selling for as much as 50 centavos a kilo in the local market. An average of 75 per cent of the total income was spent on food. Under such conditions it was amazing that the people were able to subsist.

Sanitary facilities are practically nonexistent and medical care is meager. Well water is unsafe, which may in fact account for the large pulque consumption. Because of the dryness and the temperate climate of the region, many of the so-called tropical diseases common to other parts of Mexico are absent. The main causes of death, according to health department records, are first pulmonary diseases, particularly the pneumonias, and second intestinal diseases (diarrhea, enteritis, dysentery). The birth rate (approximately 55 per 1,000), death rate (approximately 31 per 1,000), and infant mortality are all very high.\* The high birth rate and high death rate in children and young adults is shown in the records of the number of live and dead children in the clinical histories of these women. Women between 35 and 40 years of age had an average of six to seven children, of whom approximately 40 per cent were dead. Nearly 60 per cent of the children

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\* We are indebted to Dr. Miguel E. Bustamante for his aid in securing these vital statistics.

of women of 50 years and over were no longer living.

It is obvious that economically and culturally the region is very backward, in fact it is looked upon as one of the most, and perhaps the most, depressed in the country. We have not seen a poorer region in the course of rather extensive travels in Mexico.

#### PROCEDURES

In so far as possible the entire population of each village was examined. Once confidence was obtained the people were reasonably coöperative. Each individual received a careful medical history and physical examination, special attention being directed to possible symptoms and signs of deficiency disease. The cornea, bulbar conjunctiva, gums, and tongue were examined by slit lamp and biomicroscope. Near the conclusion of the survey a dentist with special training in public health spent a few days in each village and examined the mouths of all persons available.

group, a fairly accurate census was eventually obtained.

A record of food consumption was obtained on both a household and an individual basis. Each family was visited daily for one week, usually at the time the main meal was being prepared, and the composition of the dishes was recorded. Little or no cooking was done at other times. By means of a balance and measures actual weights and volumes were determined. A record of consumption by individual members of the family was kept on the basis of household measures or in terms of portions of the dish eaten by each member of the family. Foods eaten outside of the house were also recorded. On the first day of the visit an inventory of the foods present in the house was made and a record kept of those acquired by purchase or otherwise. Waste was also measured. At the end of the week an inventory of unused food was taken. This inventory and the purchase record were checked against the combined indi-

TABLE 1

#### *Census of Villages and Proportion Examined*

Village	Number Inhabitants	Persons Examined		Number of Families	Families Completely Examined		Persons Examined by Dentist	
		Number	Per cent		Number	Per cent	Number	Per cent
Bothi Baji	197	178	90	38	26	68	111	56
Las Palomas	98	86	88	20	13	65	57	58
Boxaxni	585	499	85	116	81	70	270	46
Santa Mónica	269	203	75	52	25	48	154	57
Total	1,149	966	84	226	145	64	592	52

Table 1 gives the total census and the per cent of persons and families examined. The group receiving the special dental examination is relatively small, since the dentist worked so short a time in each village. An exact enumeration of the people in these villages is hard to obtain, owing to the difficulty in finding some of the houses and to the suspicious attitude of many of the inhabitants. But because of the prolonged period of residence by the survey

vidual consumption records of the family in order to detect any gross errors or discrepancies. The records usually pertained to seven consecutive days. This was not true of all records, but in such instances a Sunday and a market day (the days of greatest change in food consumption) were always included. No significant differences were apparent in these two types of diet records.

From the weekly records of indi-

vidual food consumption, average daily intakes of calories, animal and total protein, carbohydrates, fat, vitamin A, thiamin, riboflavin, niacin, ascorbic acid, calcium, phosphorus, and iron were calculated. No correction for cooking losses seemed necessary. The analytical values for tortillas were obtained from tortillas as prepared for eating. Pulque, the major source of vitamin C, was of course drunk without cooking. Chili, whether dry or green, was nearly always merely ground and eaten uncooked. In general the wild greens would appear to be about the only food in which the cooking losses would be of much importance, and these were usually not cooked excessively.

The tables used in the dietary calculations are based in the main on the analysis of foods collected in Mexico during the time of this study, many of them from the region being surveyed.<sup>1</sup> It was possible to obtain analyses on relatively few (often on only one) of the samples of each food, and it is realized that such calculations may be inexact. However, we believe that the error is less than if calculations were based on data from other countries.

Blood samples were taken from approximately 90 per cent of the persons receiving the physical examination, though not from small children, usually not from those under 2 years. Of approximately 20 ml. of blood drawn from each individual, about 4 ml. were oxalated with a mixture of dried potassium and ammonium oxalate,<sup>2</sup> and used for the hematologic determinations, including hemoglobin,<sup>3</sup> hematocrit,<sup>2</sup> and red cell count. The remainder of the blood was used for determining total serum proteins and albumin by the quantitative biuret method,<sup>4</sup> serum carotene and Vitamin A,<sup>5</sup> and ascorbic acid.<sup>6</sup> In children under 5 years phosphatase was also determined.<sup>7</sup> A blood smear

for malaria examination (both thick and thin) was obtained from the majority, and a stool examination was done when it appeared indicated. Soon after withdrawal the blood samples were placed in a iced jug, and they were transported by automobile to the laboratory in Mexico City the same day. We investigated the stability of the blood constituents under this method of handling and found that no change occurred.

#### FOOD HABITS

As in other parts of Mexico, the basic foods here are corn (almost invariably eaten as tortillas), dried beans, and chili peppers. Supplementary foods are chiefly those readily available locally, the most important of which is the fermented maguey (agave) juice, pulque. Meat is eaten in very small quantities and is usually from sheep or goats, since these are the animals which thrive best in this arid region. Often the blood alone is eaten and the meat is sold to buy cheaper foods. The same is usually true of the small amounts of milk, eggs, and poultry produced. Rabbits are practically the only wild game eaten. Beans are relatively expensive and are used in lesser quantities than in many other parts of Mexico. Chili consumption is large. Small amounts of onion, garlic, "tomate" (a plant of the ground cherry family), and less commonly, tomatoes (jitomates) are used for flavoring purposes. Lard is the commonest cooking fat, although the amounts used are relatively small.

Almost every conceivably edible plant, including many of the cacti, are used as foods. Many grow without cultivation, during the rainy season, and by most people would be considered as weeds. A variety of worms and insects are also eaten with relish. By these means a diet of considerable variety is attained. Some of the "weeds" are surprisingly nutritious, e.g., the prolific

malva (mallow) is an exceptionally good source of vitamins A and C and calcium and iron.<sup>1</sup> Others of some importance in the diet include hediondilla (lambs' quarters); tunas and nopales (prickly pear cactus fruit and leaves, respectively); flowers of maguey (century plant), garambullo (a myrtilocactus) and yuca (yucca); verdolagas (purslane); quelites (pigweed); xocoyoll (wood or sheep sorrel); flor y hojas de nabo (flower and leaves of a variety of wild mustard); lengua de vaca (a variety of dock), and endivia (sow thistle). Fruits, except for those of several of the cacti are almost never eaten. Fresh vegetables, aside from the readily available greens and flowers above mentioned, are rarely consumed.

Many foods of considerable importance in the diets in other parts of Mexico are infrequently used in this region, probably for economic reasons. These include most fruits and vegetables, bread and other wheat or other grain products, rice, coffee, sugar, "pastas" (various flours and pastes), lentils, peas, broad beans, and peanuts.

Cooking is usually rather simple and consists chiefly in making tortillas and cooking beans. The various greens are generally boiled but not excessively, and are eaten in large quantities. Most people eat only two meals a day. The main meal is almost invariably in the mid-afternoon. The morning and evening meals, the latter being entirely omitted in the majority of instances, generally consist of holdovers from the main meal.

Children are breast fed to an advanced age, sometimes several years, and it was not unusual for a woman to have several children nursing at the same time. In fact, being either pregnant or lactating was the common status of women of childbearing age. The dietary records of children whose histories showed them still to be nursing

to any considerable extent were excluded from the tabulations.

Pulque is drunk almost universally, often in extremely large quantities. With many persons it entirely takes the place of water. Popularly it is believed to be very nutritious, many of the men saying they are unable to work without it and that it serves as a substitute for meat in the diet. The consumption even by babies and small children was considerable (Table 3).

Pulque is produced by fermentation of the juice of the maguey. Eight to ten years after transplanting, just before the plant is ready to put out the central flower-bearing stalk, this central part is removed, leaving a cup-shaped receptacle. Into this cup juice from the leaves drains and is removed daily with a large pipette made from an elongated gourd. The sides of the cup must be scraped daily in order to keep the flow going. The leaves have stored up a great deal of sugar (chiefly sucrose) for the needs of the rapidly growing flowering stalk, and the juice produced is therefore quite sweet and is known as agua miel (honey water). This agua miel is inoculated with a culture from a previous batch of pulque and allowed to ferment for a variable time, usually about 10 to 12 days. After it reaches the optimum point it should be drunk within 24 to 48 hours, since the fermenting organisms are not removed and the fermentation proceeds unchecked, causing it to spoil. The presence of the fermenting organisms gives pulque a whitish, turbid appearance. It is mildly acid and not particularly unpleasant to the taste. It is usually produced under very unhygienic conditions, but its acidity probably prevents it from being a good culture for pathogenic organisms.

Because the organisms which cause the fermentation are not removed they contribute some vitamin B and protein to the drink, and the vitamin C content is considerable. The average consump-

TABLE 2

*Principal Sources of Chief Nutrients\***(From 100 seven day diet records selected according to age and sex distribution of group studied)*

<i>Calories</i>		<i>Total Protein</i>		<i>Animal Protein (av. 4.8 per cent of total protein)</i>		<i>Carbohydrate</i>		<i>Fat</i>		<i>Vitamin A</i>	
	<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>
Tortillas	77	Tortillas	73	Goat & sheep	28	Tortillas	85	Tortillas	79	Greens	52
Pulque †	12	Beans	8	Pork	15	Beans	5	Meats	6	Chile	33
Beans	5	Pulque	6	Fish (dried)	13	Chile	2	Lard	4	Tortillas	5
Greens, vege- tables and fruits	2	Greens	5	Beef	12	Greens, vege- tables and fruits	1	Greens, vege- tables and fruits	2	Fruits and vegetables	2
		Meats	2	Blood (goat and sheep)	12			Beans	1		
		Fruits and vegetables	1	Chicken and rabbit	11						
				Eggs & milk	3						

<i>Thiomin</i>		<i>Riboflavin</i>		<i>Niacin</i>		<i>Vitamin C</i>		<i>Calcium</i>		<i>Iron</i>	
	<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>		<i>Per cent</i>
Tortillas	74	Tortillas	48	Tortillas	55	Pulque	48	Tortillas	69	Tortillas	51
Pulque	10	Pulque	24	Pulque	23	Greens	32	Pulque	8	Pulque	20
Beans	7	Greens	9	Chile	5	Fruits and vegetables	7	Greens	9	Greens	14
Fruits, greens and vege- tables	4	Beans	5	Greens, vege- tables and fruits	4	Chile	4	Beans	3	Other vege- tables	4
Meat	2	Chile	1	Meats	2			Other vege- tables	2	Meats	1
		Vegetables and fruits	1								
		Meat	1								

\* The relative importance of the foods varied little with age except for pulque, the consumption of which increased gradually to a maximum in adult males.

† Calculated on the basis of alcohol and protein content. The contribution of pulque to total calories is probably a little greater since it may contain other caloric substances.

tion for adults in our dietary records was 1 to 2 liters a day and this is probably low, since it is difficult to get an accurate report on a substance drunk abundantly at odd times. It was not unusual for a man to drink as much as 10 liters in a day. The alcohol content of pulque is low (3 to 5 per cent) but, in spite of this, obvious drunkenness was quite common, particularly on market and fiesta days.

The relative importance of pulque as well as of other major foods may be seen in Table 2, prepared from an analysis of 100 diet records, selected according to the population, age, and sex distribution in the villages surveyed. The percentages are based on principal food sources of each nutrient. It is apparent that tortillas are by far the most important single food in the diet,

with pulque second. This does not mean that pulque has a high nutrient content or is to be particularly recommended as a source of any of these nutrients, but in view of the otherwise marginal character of the diet, it becomes important, particularly for its contribution of vitamin C.

## RESULTS

The dietary tables give the intakes of the people by age and sex and a comparison with the recommended allowances of the National Research Council.\* In the case of adults, those

\* Recommended Dietary Allowances Revised, 1945. Reprint and Circular Series, Number 122, August, 1945, National Research Council, Washington, D. C. Since these 1945 values show some reductions, particularly those for members of the B complex, the calculations of per cents of recommended allowances in this study cannot be directly compared with similar calculations based on the older recommendations in other studies.

TABLE 3  
Caloric Intake

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean calories daily	952	1,121	1,273	1,518	1,645	2,098	2,454	2,144	1,533	1,818	1,831	1,614	1,706
Standard error of the mean	39	36	47	61	100	139	63	126	92	97	45	59	26
Intake recommended by the National Research Council	1,200	1,600	2,000	2,500	3,200	3,800	3,000	3,000	2,600	2,400	2,500	2,500	2,430
Per cent of recommended intake	79	70	64	61	51	55	82	71	59	76	73	65	70
Av. cal./24 hrs. divided by basal calories	1.59	1.84	1.28	1.30	1.29	1.45	1.69	1.58	1.22	1.50	1.51	1.44	1.53
Per cent calories from carbohydrate	73	74	73	72	70	68	63	66	71	69	66	67	69
Per cent calories from fat	12.7	11.7	11.8	12.1	11.3	10.7	10.0	9.9	11.4	11.7	10.5	10.9	11.1
Per cent calories from protein	12.2	11.9	12.3	12.2	12.4	11.9	11.7	11.6	12.1	12.2	11.9	12.0	12.0
Per cent calories from alcohol of pulque (entire group)	1.9	2.2	3.1	3.4	6.1	9.2	14.8	12.9	5.4	6.6	11.1	10.4	8.0
Per cent calories from alcohol (drinker's only)	3.6	3.3	4.6	5.5	8.0	10.1	15.7	13.3	6.2	8.6	11.7	10.8	9.1

for a moderately active person are used. In taking these recommendations as a basis of comparison we do not suggest that they serve as a measure of malnutrition. Such was not the purpose for which they were made, and their admitted liberality allows for factors of safety, individual variations in requirements, and lack of accurate knowledge as to human needs.<sup>8</sup> They furnish a convenient basis for comparison and evaluation of observed dietary levels.

Table 3 presents the pertinent data with regard to calories. For persons of all ages the caloric intake averages 70 per cent of that recommended. These intakes are lower than those found in a similar study in Mexico City,<sup>9</sup> but approximate those found in certain regions of the United States. Youmans, Patton, and Kern<sup>10</sup> found an average for all age groups of 2,015 for white and 1,519 for colored in rural Tennessee, and Milam and Anderson,<sup>11</sup> 1,833 for white and 1,598 for colored in rural

North Carolina, which approximate our mean of 1,706.\*

The average ratio of calories per 24 hours to basal calories calculated from height and weight, shows a considerable margin over the basal needs, although in certain age groups, particularly adolescents, the margin appears rather small. A somewhat similar situation was encountered both in Mexico City<sup>9</sup> and in rural Tennessee.<sup>10</sup> Actually this margin may be larger than appears, since the Aub-DuBois standards from which the basal requirements were calculated are often considered to be 5 to 10 per cent too high even for a United States population. Otomi

\* The use of the Atwater system of calculating caloric values, determined for mixed diets in the United States may introduce some error when applied to a rather monotonous diet derived almost entirely from plant sources, such as is eaten by these people. An attempt to apply more specific caloric values to the various foodstuffs resulted in differences which could hardly be considered significant. This error would appear to be less than several others inherent in the recording and calculating of dietary intake.



TABLE 4  
*Relation of Weights to United States Averages*

Age	Both Sexes					Males			Females			Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	16-20	21-50	50+	
No persons conforming to United States data *	101	104	92	71	48	35	147	19	34	138	17	806
Observed average weight (kilos)	9.5	14.9	19.4	27.3	36.3	50.0	56.6	55.6	47.4	48.8	46.6	35.0
Theoretical weight (kilos)	10.7	15.8	21.8	28.3	36.6	50.9	61.6	64.2	47.8	54.5	58.1	38.0
Ratio of observed to theoretical weight	0.89	0.94	0.89	0.96	0.99	0.98	0.92	0.87	0.99	0.90	0.80	0.92
More than 10 per cent under-weight:												
No.	53	34	19	12	7	8	56	13	5	70	13	290
Per cent	53	33	21	17	15	23	38	68	15	51	76	36
More than 10 per cent over-weight:												
No.	1	3	5	0	5	2	3	2	4	2	0	27
Per cent	1	3	5	0	10	6	2	10.5	12	1.5	0	3.3
No. persons to whom United States tables not applicable due to small stature, etc.												
No.	7	3	1	1	0	1	6	17	14	45	47	142
Per cent	7	3	1	1	0	3	4	47	29	25	73	15

\* Tables of Woodbury; and of Baldwin and Wood

TABLE 5  
*Protein Intake*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean grams of protein daily	28.6	33.8	37.8	45.4	55.8	61.9	71.8	62.2	47.1	56.6	54.9	49.1	51.0
Standard error of the mean	1.2	1.2	1.4	1.9	3.0	4.4	1.9	3.5	2.7	2.8	1.6	2.0	0.77
Intake recommended by the National Research Council (gm.)	40	50	60	70	85	100	70	70	80	75	60	60	64.0
Per cent of recommended intake	72	68	63	65	66	62	102	89	59	75	92	82	80
Per cent persons with intake below that recommended	85.5	88.2	92.0	87.5	100.0	94.3	46.9	60.5	100.0	84.6	71.0	77.4	76.5
Per cent Persons with intake below 50 per cent of that recommended	16.1	19.6	26.4	27.8	24.0	42.9	0.7	4.7	36.4	25.6	2.4	3.8	14.1
Per cent of animal protein eaten	6.4	3.4	5.2	5.6	6.9	4.2	4.6	2.6	5.5	6.6	4.6	5.2	4.8
Per cent persons eating no animal protein	58	51	42	33	56	40	44	47	36	41	4.6	56	46
Per cent persons eating less than 5 per cent animal protein	63	66	72	60	57	73	64	83	52	56	66	71	66

Indians appear to be short and lean but usually not extremely thin.

Table 4 compares the relative weights of these people by age and sex with United States standards, which were found to be in general agreement with the measurements for a group of individuals in Mexico City.<sup>9</sup> Whether they are applicable to these Indians is doubtful. Many persons, particularly adult women, were of such a body type, usually due to their small stature, that the tables could not be applied at all, and their exclusion probably modifies the averages. It can be stated, however, that a large percentage, particularly among children, was underweight by United States standards.

Table 3 also gives the percentages of calories derived from carbohydrate, fat, protein, and alcohol. It will be seen that the diet is a relatively high carbohydrate, low fat and protein one. Particularly striking are the percentages of calories from alcohol, practically all from pulque. The last two lines give these figures for the entire group and for those whose records showed they drank significant quantities in the week of the record. There is only a 1 per

cent (8.0 per cent as compared with 9.1 per cent) difference between the consumption of these two groups. Even among babies the consumption is significant. The top figure of 14.8 per cent in adult males expresses only the average and in individual instances it was sometimes doubled, or more.

Table 5 shows that the average total protein intake was 80 per cent of that recommended. This should be adequate if considered quantitatively only, but the situation qualitatively is not good. An average of only 4.8 per cent was from animal sources, while 46 per cent of the persons ate no animal protein whatever and 66 per cent ate less than 5 per cent. Also it will be seen that in spite of the fairly good average a considerable percentage, especially in the younger age groups, ate quantitatively less than 50 per cent of the recommended allowances.

Table 6 gives the data on blood proteins. The biuret instead of the Kjeldahl method was used because of the saving in time. Although somewhat less reliable for general use, the biuret method appears suitable for the study of protein deficiency in population

TABLE 6  
*Blood Serum Proteins*

Age	Both Sexes		Males		Females			Entire Group
	1-9	10-15	16-50	50+	16-50	50+	Lactating and Pregnant	
No. persons	200	117	187	36	139	63	80	531
Total proteins gm./100 ml.	7.39	7.38	7.61	7.38	7.43	7.44	7.21	7.43
Standard error of the mean	0.047	0.067	0.055	0.13	0.076	0.12	0.078	0.077
Per cent below 6.5 gm.	7.0	7.7	5.9	10.1	12.2	12.7	16.9	9.4
Per cent below 6 gm.	2.5	5.1	3.7	0	7.9	7.9	5.6	4.7
Albumin gm./100 ml.	4.99	4.93	4.81	4.23	4.75	4.39	4.62	4.78
Standard error of the mean	0.038	0.055	0.049	0.13	0.056	0.092	0.064	0.053
Per cent below 4.0 gm.	5.0	6.0	9.1	38.9	10	25.4	13.5	11
Per cent below 3.5 gm.	2.0	4.3	3.7	11.1	5.7	11.1	4.5	4.7

groups<sup>12</sup>; and in general the values compare favorably with those of other surveys.<sup>9, 11, 12</sup> \* Approximately 10 per cent may be considered as having low protein values (total protein below 6.5 mg., albumin below 4.0 gm.), but the deficiency was rarely severe, nor is it particularly marked in the lactating and pregnant women, where a deficiency would most likely be evident. The poorest groups are those of persons over 50 years of age. Nearly 40 per cent of the males over 50 had albumin values below 4 gm. Only 14 adults showed clinical evidence of mild edema. Of these, 6 had blood proteins sufficiently low to have been a major factor in causation of the edema (average total protein 5.1 gm., and albumin 2.6 gm.). The edema in the others must be

tillas, with beans and pulque of less importance (Table 2). Among vegetable proteins, corn protein (if the germ is included as in preparing tortillas<sup>13</sup>) and bean protein may be considered of rather good biological value. The protein content of pulque was calculated from its nitrogen content; but it is possible that pulque contains other nitrogen-containing compounds in addition to protein, and therefore the assigned value may be somewhat high. It is known that the protein of some yeasts is deficient in sulfur-containing amino acids,<sup>14</sup> but whether this deficiency exists in pulque proteins remains to be determined.

It is possible that a deficiency in the quality and quantity of protein may have adversely affected the growth of

TABLE 7  
Vitamin A Intake

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean daily intake (I. U.)	3,799	4,332	4,595	5,035	5,170	5,556	6,897	5,634	4,773	5,699	6,218	5,821	5,498
Standard error of the mean	310	272	341	324	524	511	418	540	517	471	374	531	138
Intake recommended by National Research Council	2,000	2,500	3,500	4,500	5,000	6,000	5,000	5,000	5,000	5,000	5,000	5,000	4,331
Per cent of recommended intake	190	173	131	112	103	93	138	113	95	114	124	116	127
Per cent of persons with intake below that recommended	25	30	48	57	56	68	39	46	59	49	49	53	45
Per cent of persons with intake below 50 per cent of that recommended	6	6	17	11	12	20	14	26	9	9	16	11	13

ascribed to other causes. From the standpoints of total protein intake, blood proteins, and clinical examination, the protein nutrition of these people was fairly good.

The major source of protein was tor-

\* Hurtado, et al.<sup>23</sup> observed a moderate but definite increase in serum proteins within three hours after arrival at high altitude. The chronic effects of altitude must be determined before these protein values can be compared with those elsewhere.

these people without significantly lowering the blood proteins. This is known to occur in experimental animals.<sup>15</sup> As judged by United States standards growth was poor, the developmental ages lagging two to three years behind those for the United States.<sup>16</sup>

Table 7 presents the vitamin A intake. This nutrient was nearly all in the form of provitamin A (carotene) and the in-

TABLE 8  
*Blood Vitamin A and Carotene*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	16-20	21-50	50+	Lactating and Pregnant	
No. persons	22	78	86	70	45	34	150	36	24	111	63	90	809
Mean serum vitamin A (I. U.)	73	69	78	87	91	111	126	87	102	105	102	105	98
Standard error of the mean	7.4	2.8	3.6	4.6	3.4	5.4	3.4	6.5	13.0	3.6	5.3	4.2	1.4
Per cent below 70 I. U.	59	51	44	27	20	6	9	36	21	17	22	21	25
Per cent below 50 I. U.	27	27	17	7	2	3	2	19	4	12	12	4	10
Per cent below 30 I. U.	4.5	1.3	2.3	1.4	0	0	0.7	8.3	0	2.7	1.6	1.1	1.7
Mean serum carotene (micrograms)	136	158	156	149	138	82	80	64	132	120	118	136	122
Standard error of the mean	19.0	7.9	6.9	7.7	9.8	9.1	3.8	5.8	10.0	6.1	8.5	7.5	2.4

take apparently was adequate, since it averaged 127 per cent of that recommended. However, it is recognized that the requirement may be increased if met chiefly as carotene rather than true vitamin A. Also, at least 13 per cent of persons ate less than 50 per cent of the recommended allowance.

Table 8 gives the blood values for

vitamin A and carotene. In general the vitamin A values correspond to those encountered elsewhere, rising gradually from childhood to adult life.<sup>9, 11, 17</sup> The percentage lying below 70 I.U., was 25, but we believe this is a high limit, particularly for children, among whom 50 I.U. seems a more satisfactory minimum. The proportion of persons with levels

TABLE 9  
*Thiamin Intake*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean daily thiamin intake (mg.)	0.86	1.0	1.2	1.4	1.7	2.0	2.4	2.0	1.6	1.7	1.7	1.5	1.61
Standard error of the mean	0.035	0.035	0.051	0.060	0.086	0.145	0.073	0.114	0.153	0.090	0.048	0.069	0.027
Intake recommended by National Research Council	0.6	0.8	1.0	1.2	1.5	1.8	1.5	1.5	1.3	1.2	1.2	1.2	1.19
Per cent of recommended intake	143	125	120	117	113	111	160	133	123	142	142	125	135
Per cent persons with intake below that recommended	8	23	21	42	32	49	14	23	41	18	14	28	22
Per cent persons with intake below 50 per cent of that recommended	0	1.0	0	0	0	0	0	0	0	0	0	0	0.1
Mg. thiamin per 1,000 calories	0.90	0.80	0.94	0.92	1.03	0.95	0.95	0.93	1.04	0.94	0.93	0.93	0.94

below 30 I.U. is included, since classical vitamin A deficiency disease is usually not encountered above this level.<sup>18</sup>

Physical signs of vitamin A deficiency were few and indefinite. Dry skins were the rule, but this condition could be attributed to hygienic and physical factors. Twenty persons with dry hyperkeratotic skin, possibly of nutritional origin, were encountered, but on the average neither their vitamin A intake nor blood levels were low. No classic signs such as true Bitot spots were found. The incidence of conjunctival changes was high (Table 18), but these may not be an expression of vitamin A deficiency, and, as previously found, no correlation was evident between these changes and dietary or blood levels.<sup>19</sup>

Thiamin intake as presented in Table 9 indicates that consumption was adequate even for this high carbohydrate diet. At all ages the average equaled or exceeded the recommended allowance, and only one person received less than 50 per cent. Also the milligrams of thiamin per 1,000 calories was well above the value often recommended of

0.5–0.6 mg.,<sup>20</sup> and was far removed from a commonly given danger zone of approximately 0.2 mg. per 1,000 calories.

No clinical cases of thiamin deficiency were encountered. There was a high incidence of symptoms occasionally attributed to this deficiency, and calf tenderness was rather common (Table 19). However, it is doubtful whether these symptoms or signs in themselves constitute evidence of thiamin deficiency, and in a population group of the intellectual level of this one they are particularly difficult to evaluate. There were no cases of definite peripheral neuritis.

In Table 10 it may be noted that the riboflavin intake was definitely low, averaging 41 per cent of the recommended allowance, with 98 per cent of persons taking less than that recommended, and 69 per cent less than 50 per cent of that recommended. The average milligrams of riboflavin per 1,000 calories lies only a little above a value which was found to produce gradual depletion of body stores,<sup>21</sup> and

TABLE 10  
*Riboflavin Intake*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean daily riboflavin intake (mg.)	0.35	0.40	0.48	0.57	0.67	0.89	1.10	0.89	0.63	0.73	0.71	0.72	0.69
Standard error of the mean	0.025	0.015	0.023	0.025	0.045	0.078	0.042	0.058	0.051	0.054	0.029	0.045	0.017
Intake recommended by National Research Council	0.9	1.2	1.5	1.8	2.0	2.5	2.0	2.0	2.0	1.8	1.6	1.6	1.66
Per cent of recommended intake	39	33	32	32	34	36	55	45	32	41	44	45	41
Per cent persons with intake below that recommended	100	100	99	100	100	100	95	100	100	97	96	94	98
Per cent persons with intake below 50 per cent of that recommended	76	85	95	93	84	80	45	60	86	69	50	62	69
Mg. riboflavin per 1,000 calories	0.368	0.357	0.377	0.375	0.407	0.424	0.448	0.415	0.411	0.401	0.388	0.446	0.404

TABLE 11  
*Niacin Intake*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean daily niacin intake (mg.)	4.6	5.2	6.0	7.7	9.4	11.7	14.2	12.4	8.0	9.9	10.7	9.3	9.4
Standard error of the mean	0.28	0.20	0.23	0.39	0.67	0.92	0.56	0.80	0.59	0.70	0.36	0.46	0.19
Intake recommended by National Research Council	6	8	10	12	15	18	15	15	13	12	12	12	11.9
Per cent of recommended intake	77	65	60	64	63	65	95	83	62	83	89	78	79
Per cent persons with intake below that recommended	74	87	97	89	92	91	54	72	91	69	68	79	76
Per cent persons with intake below 50 per cent of that recommended	19	29	35	36	32	40	9	19	32	21	12	17	22

intakes were considerably below this average.

The analyses of Mexican foods has indicated that riboflavin deficiency might be expected,<sup>1</sup> and this is supported by the clinical finding of a large amount of angular cheilosis and glossitis (Tables 18 and 19). The incidence of corneal invasion was 42 per cent (Table 18). This is less than that encountered in whites, but greater than that in

Negroes, in the United States, where the riboflavin intake was considerably higher.<sup>11, 19</sup> The possible effect of race precludes evaluation of the incidence of corneal invasion in these Indians, but no correlation was evident between riboflavin intake and corneal invasion or other signs suggestive of riboflavin deficiency.

The niacin intake (Table 11) was low, as judged by the recommended

TABLE 12  
*Vitamin C Intake*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean daily vitamin C intake (mg.)	39.9	41.8	44.8	61.7	74.2	101.6	176.8	144.1	71.4	80.9	116.5	101.2	96.3
Standard error of the mean	4.0	3.0	3.4	5.2	9.1	11.4	8.4	12.5	9.3	8.9	5.2	5.7	2.7
Intake recommended by National Research Council	35	50	60	75	90	100	75	75	80	80	70	70	65.1
Per cent of recommended intake	114	84	75	82	82	102	236	192	89	101	166	145	141
Per cent persons with intake below that recommended	52	70	75	36	68	51	14	12	64	54	21	23	40
Per cent persons with intake below 50 per cent of that recommended	27	33	41	15	36	23	3	0	23	23	4	2	17

TABLE 13  
*Blood Vitamin C*

Age	Both Sexes		Males	Females		Entire Group
	1-9	10-15	16 Yrs. and Over	16 Yrs. and Over	Pregnant and Lactating	
No. persons	205	118	223	203	90	839
Mean blood vitamin C (mg./100 ml.)	1.16	1.28	1.18	1.22	1.14	1.19
Standard error of the mean	0.029	0.033	0.030	0.027	0.039	0.014
Per cent below 0.6 mg.	9.7	4.3	13.9	7.4	4.4	8.9
Per cent below 0.3 mg.	1.9	0.8	2.2	1.5	1.1	1.6

allowances, but it was well above that usually producing pellagra. The situation is complicated here by the fact that tortillas made from corn furnished about three-fourths of the calories, and it is possible that under these conditions the niacin intake may represent a deficiency. Clinically, no classical pellagra was encountered, although dryness and cracking of the skin of the feet and shins was common. The incidence of glossitis was high (Table 18), and niacin as well as riboflavin deficiency may well have been a factor in its production.

Vitamin C intake may be characterized as good (Table 12), averaging 142 per cent of the recommended allowance. In no group did it drop below 75 per cent, which is almost certainly adequate. The very high intake among adults was due to their large pulque consumption. The blood levels (Table 13) are in accord with the vitamin C intakes, averaging well over 1 mg. for all age

groups, with a relatively small percentage lying below 0.6 mg., and only 1.6 per cent lying below 0.3 mg. Only two zero values were encountered in the entire study, one in a person who drank no pulque, the other in a person with active malaria. This is in marked contrast to several studies made in the United States where zero values were common.<sup>11, 12</sup>

Physical examination revealed no cases that were believed to be scurvy. However, in spite of the relatively high vitamin C intakes and blood values, red, swollen, spongy gums were extremely common.

The incidence and grading of gingivitis by slit lamp is given in Table 18 and as judged by the dental examination in Table 20. It is believed that this high incidence must be ascribed to poor dental hygiene rather than to any vitamin C deficiency. Tooth brushes or dental care were practically nonexistent. No correlation was found between gin-

TABLE 14  
*Hematologic Findings*

Age	Both Sexes		Males	Females		Entire Group
	1-9	10-15	16 Yrs. and Over	16 Yrs. and Over	Pregnant and Lactating	
No. persons	214	118	223	205	92	852
Mean hemoglobin gm./100 ml	13.2	14.2	15.5	13.8	13.7	14.1
Standard error of the mean	0.036	0.051	0.036	0.031	0.045	0.034
Per cent below 12 gm.	10.3	5.1	1.8	2.4	4.3	4.8
Per cent below 10 gm.	2.3	3.4	0.4	1.0	1.1	1.5
Mean red blood cells (in millions)	4.30	4.51	4.81	4.57	4.47	4.55
Standard error of the mean	0.027	0.033	0.029	0.022	0.035	0.015
Mean hematocrit	39	41	45	42	41	42
Standard error of the mean	0.25	0.34	0.26	0.19	0.33	0.14

givitis and dietary or blood vitamin C levels.

Table 14 indicates that the hematologic values are good as compared with the usual United States findings; but the situation is complicated by the altitude, and no extensive study at a similar altitude is available for comparison. It is apparent that any appreciable amount of anemia was rare. It should be mentioned that hookworm is not a complicating factor in this region. The average values for lactating and pregnant women were not significantly lower than those for other women, suggesting that the intake of hemoglobin-forming material, particularly iron, was sufficient to support the extra strain of pregnancy. Calculation of the mean corpuscular volume and mean corpuscular hemoglobin from these data shows a moderate increase over the usual values. This may possibly be ascribed to altitude and is in accord with several other studies.<sup>9, 23, 24</sup> Records of iron intake (Table 15) support the hematologic data. For persons in each age group the consumption was far above that recommended, and the incidence of low intakes was small.

The calcium and phosphorus intakes (Table 16) are chiefly accounted for by the consumption of tortillas. The average calcium intake is rather good, 85 per cent of that recommended. However, in small children the average drops to 50 per cent of the recommended allowance and the incidence of low intakes is high. Nursing children, which means practically all through one year of age and often considerably beyond, are not included, as consumption could not be determined. Since the mothers' calcium intakes were as a rule adequate, those of nursing children probably were also. No cases of rickets or diseases attributable to calcium deficiency were encountered. The phosphorus intakes appeared to be fairly adequate and the calcium-phosphorus ratio seemed favorable, averaging 0.75, which is not far from the usually given optimum ratio of one. The calcium content of the well water (av. 43 mg./liter) probably contributed to the calcium requirement.

No attempt was made to measure the vitamin D intake. Because of the dryness of the region, clouds seldom interfere with exposure to the sun's rays and these people are outdoors a major por-

TABLE 15  
*Iron Intake*

Age	<i>Both Sexes</i>				<i>Males</i>				<i>Females</i>				<i>Entire Group</i>
	<i>1-3</i>	<i>4-6</i>	<i>7-9</i>	<i>10-12</i>	<i>13-15</i>	<i>16-20</i>	<i>21-50</i>	<i>50+</i>	<i>13-15</i>	<i>16-20</i>	<i>21-50</i>	<i>50+</i>	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	556
Mean daily intake of iron (mg.)	12.5	12.9	14.2	18.7	20.7	28.3	36.3	30.3	19.5	23.6	26.4	22.6	23.2
Standard error of the mean	0.50	0.45	0.57	0.95	1.5	2.06	1.32	1.97	1.16	1.50	0.96	1.2	0.45
Intake recommended by National Research Council	7	8	10	12	15	15	12	12	15	15	12	12	11.4
Per cent of recommended intake	179	161	142	156	138	189	302	252	130	157	220	188	204
Per cent persons with intake below that recommended	19	15	20	18	16	8.6	2	2.3	15	15	4.7	3.5	10
Per cent persons with intake below 50 per cent of that recommended	4.8	0	1.1	0	0	0	0.7	0	0	2.6	0	0	0.7



TABLE 16  
*Calcium and Phosphorus Intakes*

Age	Both Sexes				Males				Females				Entire Group
	1-3	4-6	7-9	10-12	13-15	16-20	21-50	50+	13-15	16-20	21-50	50+	
No. persons	62	102	87	72	25	35	147	43	22	39	169	53	856
Mean daily calcium intake (gm.)	0.49	0.51	0.61	0.72	0.81	1.08	1.14	1.00	0.76	0.88	0.90	0.78	0.82
Standard error of the mean	0.020	0.021	0.022	0.029	0.052	0.065	0.037	0.053	0.053	0.050	0.011	0.028	0.012
Intake recommended by National Research Council	1.0	1.0	1.0	1.2	1.4	1.4	0.8	0.8	1.3	1.0	0.8	0.8	0.96
Per cent of recommended intake	49	51	61	60	58	77	142	125	58	88	112	98	85
Per cent persons with intake below that recommended	92	96	93	92	100	80	12	28	100	54	32	47	59
Per cent persons with intake below 50 per cent of that recommended	42	29	22	21	24	11	2	2	36	5	1	4	14
Mean daily phosphorus intake	0.61	0.69	0.71	1.06	1.2	1.4	1.6	1.4	1.1	1.3	1.3	1.1	1.1
Standard error of the mean	0.033	0.029	0.036	0.045	0.076	0.078	0.051	0.056	0.059	0.066	0.035	0.038	0.017
Calcium-phosphorus ratio	0.80	0.74	0.86	0.68	0.68	0.77	0.71	0.71	0.69	0.68	0.69	0.71	0.75

tion of the time, often with rather meager clothing. A vitamin D deficiency is therefore extremely unlikely. All phosphatase determinations were within normal limits.

It is apparent that average vitamin A, thiamin, ascorbic acid, and iron intakes may be considered very good, since they exceeded the recommended values. Calcium was a little low but probably ade-

TABLE 17  
*Summary of Average Intakes Observed, Compared with Recommended Intakes for Average Person*

	Calories	Protein (gm.)	Ca (gm.)	Fe (mg.)	Vitamin A (I. U.)	Thiamin (mg.)	Riboflavin (mg.)	Niacin (mg.)	Ascorbic Acid (mg.)
Recommended National Research Council intakes corrected for age and sex distribution of group studied	2,430	64.0	0.96	11.4	4,331	1.19	1.66	11.9	68.1
Average intake observed	1,706	51.0	0.82	23.2	5,498	1.61	0.69	9.4	96.3
Per cent of recommended intake	70	80	85	203	127	135	42	79	141

Line one of Table 17 contains the recommended allowances adjusted to the group surveyed, calculated by using the National Research Council values for the age and sex distribution of this study. Line two gives the average intakes actually found, and line three the per cent of the recommended allowances.

quate. Protein, especially if considered qualitatively, calories, and niacin were moderately low, the last perhaps accentuated by the very high corn consumption. Riboflavin is the only nutrient which could be characterized as very definitely inadequate, sufficiently so to produce clinical signs.

## PHYSICAL FINDINGS

One important consideration in our choice of this area for a nutrition study was that it is one of the economically poorest in Mexico. Nevertheless, surprisingly little definite clinical nutritional deficiency was observed. The people were short and lean in type but not extremely thin. Probably the most striking feature of possible nutritional origin was the small size and underdevelopment of the children for their age. How much of this is a racial characteristic and how much is due to nutritional deficiency cannot be determined. In most instances the average intake of the various nutrients, as judged by the National Research Council recommendations, were lower among growing children. Malnutrition in a few children was evidenced by a marked thinness, retarded growth and development, paleness, etc., rather than by frank syndromes such as scurvy, pellagra, and rickets.

The skins of these people were almost invariably dry, scaly, and often hard and cracked, especially over the exposed areas with the degree of change increasing with age. It is doubtful whether this should be attributed to nutritional failure. The region is very dry, sunny, dusty, and windy. The people seldom bathe, are almost constantly louse infested, and their clothing often offers very poor protection against the elements. Under these conditions one would expect to find skin changes due to these physical agents. Also conjunctival changes including pingueculae seemed to appear earlier and to be more severe here than in certain other regions of Mexico that we have studied. However, these also may be attributed to physical effects of sun, wind, dryness, and dust rather than to vitamin A deficiency.

The most common clinical signs of probable deficiency were cheilosis and glossitis. The specificity of cheilosis as

a sign of riboflavin, B-complex, or other nutritional deficiency has been questioned. It was found impossible to run a well controlled therapeutic experiment under the conditions of this study, owing to the lack of sufficient coöperation. In two of the villages we were able to induce 13 persons with rather severe angular cheilosis to take riboflavin (5 mg. t.i.d.) with reasonable regularity. Little improvement was evident for about two weeks, but at the end of from three to four weeks 5 persons were cured or markedly improved and 3 moderately so. Two of the moderately improved were then treated with B-complex, and 1 was cured and the other markedly improved. Three with little or no improvement were similarly treated and 2 were markedly, and 1 moderately, improved. It seems likely that all might have responded to riboflavin alone had it been possible to continue adequate therapy for a sufficient period of time. In spite of the fact that this cannot be considered as a crucial experiment we believe it suggests that the cheilosis found here was in the main a B-complex, and more specifically a riboflavin, deficiency. Seven of the 13 treated with riboflavin or B-complex showed a mild degree of corneal invasion also, and in 5 it was still present at the end of the treatment.

It is of interest that the incidence of cheilosis among those consuming considerable pulque (500 ml. or more daily) was 9 per cent as against 45 per cent in the others. An attempt to allow for the factor of age resulted in groups too small to be statistically significant, but the percentages do suggest that the vitamin B of pulque aided in preventing signs of B-complex deficiency such as cheilosis.

Glossitis of severe grade was also common. In this survey conditions did not appear favorable for treatment of a satisfactory group. However, in other regions we have since encountered

TABLE 18

*Results of Slit Lamp Examination*

Age (Years)	Corneal	Conjunctival Changes		Gingivitis		Glossitis	
	Per cent with Vascularization	Per cent of Total	Per cent with Marked Changes	Per cent of Total	Per cent with Marked Changes	Per cent of Total	Per cent with Marked Changes
4-9	30	75	6	62	6	65	12
10-15	46	77	15	69	13	78	26
16 and over (males)	48	97	75	89	43	97	45
16 and over (females)	36	97	77	85	49	96	57
Entire group	42	94	66	84	41	93	46

tongues of similar appearance which responded to therapy with B vitamins, particularly to the combined B-complex. We therefore believe that in the main the tongue changes encountered here were due to B-complex deficiency. The

effects of trauma such as the eating of large quantities of very hot chili peppers may also be important.

Table 18 summarizes the slit lamp findings. Since a larger proportion of examinations were made of adults than

TABLE 19

*Results of Physical Examinations, Clinical Histories, and Miscellaneous Laboratory Tests\***Physical Findings*

Individuals examined	966
Angular cheilosis (suggestive of riboflavin deficiency)	92
Dry skin	681
Hyperkeratosis	20
Edema (6 with low blood protein values)	14
Heart murmurs (all systolic)	46
Enlarged spleen	20
Palpable liver	20
Just palpable (9 in small children)	16
Liver at costal margin but with evident collateral circulation	1
Markedly enlarged liver (2 with ascites)	3
Pulmonary rales (3 probably tuberculosis)	11
Calf tenderness (approximately two-thirds in women)	155
Glossitis and gingivitis	See Tables 18 and 20

*Clinical History*

Photophobia and/or burning of eyes	300
Hemeralopia	67
Painful or burning tongue	153
Bleeding gums	126
Gastrointestinal symptoms	92
Anorexia	47
Nausea or vomiting	37
Diarrhea	36
Parasthesias, cramps, muscle pains	374
Fatigue, debility, irritability	184
Palpitation	26
Gain in weight	170
Loss in weight	219

*Laboratory Tests*

Positive serology (Klein & Kahn)	Entire group	12%
	Adult males	20%
Positive malaria smears (all plasmodium vivax)		8
Phosphatase and phosphorus determinations (children under 5 years)		52
Average phosphorus		5.0 mg.
Average phosphatase (maximum value 10.4)		5.6 units

\* The results of the clinical history and certain of the physical findings, e.g., calf tenderness, must be evaluated in terms of the low intellectual level of these people, the presence in some instances of a language difficulty, and their not infrequent desire to receive medicine for a real or imagined illness. We attempted to minimize the effects of these factors but they undoubtedly influenced the results.

of children, the incidence of changes for the entire group is rather heavily weighted with adults. No attempt was made to group acute and chronic cases separately, but approximately 60 per cent of the cases of gingivitis and 94 per cent of glossitis cases were considered as predominantly chronic. It

murmurs, undoubtedly mostly functional, is also less than was observed in the United States.

These people had remarkably good teeth considering that they receive no dental care and practise no dental hygiene. The results of the dental examinations are presented in Table 20.\*

TABLE 20

*Results of Dental Examination*

<i>Age (Years)</i>	<i>Number of Persons Examined</i>	<i>Per cent with Perfect Teeth</i>	<i>Per cent of Decayed, Missing, or Filled Teeth <sup>25</sup></i>	<i>Per cent of Persons with Gingivitis</i>
Less than 2	14	100	0	0
2-6	123	81	2 0	1.6
7-11	97	65	3 9	36
12-15	64	69	3 1	45
16 and over (males)	107	48	8.0	83
16 and over (females)	182	39	8.7	85

will be seen that except for corneal vascularization, age or factors associated therewith are contributory causes of these changes, since there is an increase in incidence among older persons. Consequently we are skeptical of the value of these slit lamp examinations, particularly those of the cornea, conjunctiva, and gums, as criteria of nutritional status, unless supported by other clinical evidence.<sup>19</sup>

Table 19 presents the incidences of certain clinical symptoms and signs possibly attributable to nutritional status. Whether many should be so considered in a large percentage of cases is, we believe, very doubtful.

Because of the extreme dryness of the region no transmission of malaria occurred in these villages, but occasionally persons worked in irrigated regions of the valley for a few days and returned with the disease. We were impressed by the relatively low incidence of hypertension in these Indians as compared with that in the United States. This was also observed among several groups composed chiefly of "mestizos" (mixed Indian and white blood) which we have studied. The incidence of heart

To one accustomed to seeing the high incidence of dental decay present in most areas of the United States, the observation that nearly 50 per cent of adult males had perfect teeth, seems remarkable. Calculus formation in many of the mouths was extreme. The incidence of gingivitis grossly evident on dental examination was very high, while that of pyorrhea was low.

From a dietary standpoint the main factors thought to be important in tooth formation are met. The intakes of vitamins A and C, calcium, and phosphorus are relatively good, and there is plenty of solar radiation to take care of the vitamin D requirement. Although the diet is high in carbohydrate, chiefly due to tortillas, practically no sugars are eaten. There was no clinical evidence of fluorosis in these people. Chemical examination of the water from several of the wells showed 0.2 to 0.3 p.p.m. of fluorine. This is far below the optimum usually stated to be desirable for preventing caries.

\* The studies on the teeth were done in collaboration with Felix R. Leycegui, D.D.S. A more detailed account of the dental findings in this and other regions of Mexico will be reported separately.

## SUMMARY

The results of a nutrition survey of Otomi Indians in the Mezquital Valley of Mexico are presented. The region is arid and barren and, economically and culturally, one of the most depressed of the country. The inhabitants eat very few of the foods which are commonly considered as essential to a good nutrition pattern. Their consumption of meat, dairy products, fruits, and vegetables is exceedingly low. However, through the eating of tortillas, the drinking of pulque (the fermented unfiltered juice of the century plant), and the eating of every conceivably edible plant available, a fairly good diet is maintained.

Pronounced clinical nutritional deficiency was uncommon. The only deficiency, evident both clinically and through dietary records, may be attributed to insufficient riboflavin. Because of the large corn consumption some niacin deficiency probably also existed. Protein, if considered qualitatively, and caloric intakes were moderately low. Intakes of vitamin A, thiamin, ascorbic acid, iron, calcium, and phosphorus were on the average good.

Clinically, angular cheilosis and glossitis were the major signs of deficiency encountered. Growth, by United States standards, was retarded, but it is impossible to evaluate the nutritional as distinct from the racial factors. The teeth were found to be excellent.

Blood studies, including hematological examination and determination of blood proteins and vitamins A and C, revealed values which in general compared favorably with those encountered elsewhere.

It appears that in spite of the barrenness and poverty of the region its inhabitants have through many centuries developed food habits and a way of life adapted thereto. Attempts at change would be a mistake until their economic and social conditions can be improved

and something really better substituted.

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## REFERENCES

1. Cravioto, R., Lockhart, E. E., Anderson, R. K., Miranda, F., and Harris, R. S. Composition of Typical Mexican Foods. *J. Nutrition*, 29:317, 1945.
2. Wintrobe, M. M. *Clinical Hematology*. Philadelphia; Lea and Febiger, 1942, pp. 200-201.
3. Evelyn, K. A. Stabilized Photoelectric Colorimeter with Light Filters. *J. Biol. Chem.*, 115:63, 1936.
4. Robinson, H. W., and Hogden, C. G. Biuret Reaction in Determination of Serum Proteins. *J. Biol. Chem.*, 135:707, 1940.
5. Kimble, M. S. Photoelectric Determination of Vitamin A and Carotene in Human Plasma. *J. Lab. & Clin. Med.*, 24:1055, 1939.
6. Midlin, R. L., and Butler, A. M. Determination of Ascorbic Acid in Plasma: a Macromethod and Micromethod. *J. Biol. Chem.*, 122:673, 1938.
7. Bodansky, A. Phosphatase Studies: Determination of Serum Phosphatase. Factors Influencing Accuracy of Determinations. *J. Biol. Chem.*, 101:93, 1933.
8. Wilder, Russel M. Misinterpretation and Misuse of the Recommended Dietary Allowance. *Science*, 101:285, 1945.
9. Robinson, W. D., Payne, G. C., and Calvo, J. A Study of the Nutritional Status of a Population Group in Mexico City. *J. Am. Dietet. A.*, 20:289, 1944.
10. Youmans, J. B., Patton, E. W., and Kern, R. Surveys of the Nutrition of Populations. Description of the Population, General Methods and Procedures and the Findings in Respect to the Energy Principle (Calories) in a Rural Population in Middle Tennessee. Part 2. *A.J.P.H.*, 33:58, 1943.
11. Milam, D. F., and Anderson, R. K. Nutrition Survey of an Entire Rural County in North Carolina. *South. M. J.*, 37:597, 1944.
12. Youmans, J. B., Patton, E. W., Sutton, W. R., Kern, R., and Steinkamp, R. Surveys of the Nutrition of Populations. 2. The Protein Nutrition of a Rural Population in Middle Tennessee. *A.J.P.H.*, 33:955, 1943.
13. Corn Germ, A Valuable Protein Food. *Nutrition Reviews*, 2:212, 1944.
14. Development of Liver Injury in Rats on Yeast Protein Diet. *Nutrition Rev.*, 2:180, 1944.

15. Metcalf, J., Favour, C. B., and Stare, F. J. Plasma Protein and Hemoglobin in the Protein-deficient Rat. A Three-dimensional Study. *J. Clin. Investigation*, 24:82, 1945.
16. Wetzel, N. C. Physical Fitness in Terms of Physique, Development and Basal Metabolism. *J.A.M.A.*, 116:1187, 1941.
17. Yeumans, J. B., Patton, E. W., Sutton, W. R., Kern, R., and Steinkamp, R. Surveys of the Nutrition of Populations. 3. The Vitamin A Nutrition of a Rural Population in Middle Tennessee. *A.J.P.H.*, 34:368, 1944.
18. Levels of Carotene and Vitamin A in Human Blood. *Nutrition Rev.*, 3:38, 1945.
- 19a. Anderson, R. K., and Milam, D. F. Biomicroscopy of the Eyes in Evaluation of Nutritional Status. Conjunctival Changes. *J. Nutrition*, 30:11, 1945.
- 19b. Anderson, R. K., and Milam, D. F. Biomicroscopy of the Eyes in Evaluation of Nutritional Status. Corneal Vascularization. *J. Nutrition*, 30:17, 1945.
20. Melnick, D. A Critique of Values Suggested as the Thiamin Requirement of Man. *J. Am. Dietet. A.*, 20:516, 1944.
21. Williams, R. D., Mason, H. L., Cusick, P. L., and Wilder, R. M. Observations on Induced Riboflavin Deficiency and the Riboflavin Requirement of man. *J. Nutrition*, 25:361, 1943.
22. Milam, D. F. A Nutrition Survey of a Small North Carolina Community. *A.J.P.H.*, 32:406, 1942.
23. Hurtado, A., Merino, C., and Delgado, E. Influence of Anoxemia on the Hematopoietic Activity. *Arch. Int. Med.*, 75:284, 1945.
24. Gutierrez Villareal, A. El volumen corpuscular medio. Thesis, Military Medical School, Mexico, D. F., 1942.
25. Klein, H., and Palmer, C. E. Dental Caries in American Indian Children. *Pub. Health Bull.*, 239, U. S. Govt. Ptg. Office, Dec., 1937.

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ment of environmental conditions, and the teaching of healthful living. The strip has been prepared by the Health and Welfare Department under the direction of Donald B. Armstrong, M.D., Second Vice-President.

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# Proposed Report on the Educational Qualifications of Health Officers<sup>\*†</sup>

## I. GENERAL SCOPE OF THE FIELD

### A. *Specific Contribution to Public Health by Workers in this Field*

It has long been established that public health is a concern of government and the necessity for an official designated by law as health officer is universally recognized. Past accomplishment of the health officer and his associates as measured by the prevention of sickness and death and the prolongation of life is a matter of common knowledge. As progress has been made in certain fields of preventive medicine, other and more complex problems have come into prominence, such as accident prevention, the prevention or amelioration of the chronic and degenerative diseases, and the maintenance of optimum health. Scientific discoveries of wide practical application have been rapid in the past few decades and the demand for public services for the prevention and cure of disease has become greater and in all probability will so continue. Opportunities for challenging and constructive service in the field of public health have developed rapidly and the needs for specific education and training have increased accordingly.

The health officer's responsibilities vary considerably in different public health organizations, but in general he has administrative responsibility for all activities of the official health agency operating in the area and directs the staff promoting those activities.

The provision of medical care, or the administration of a medical care program in certain special fields or as an emergency activity, has with increasing frequency been accepted as a responsibility of official health agencies. The medical treatment of a large proportion of persons suffering from the venereal diseases, tuberculosis, and certain of the acute infectious diseases has for some time been directly or indirectly the responsibility of health departments, as has a medical and surgical treatment program for the physically handicapped in many communities. Partial responsibility for the treatment of cancer and other chronic diseases is sometimes assumed by the health department, and during recent years as an "emergency" measure, the administration of medical services for the wives of certain members of the armed forces, and general pediatric care for this segment of the population, have been undertaken by the official health agencies. There are indications that the health officer's responsibilities in the field of medical care may be increased rather than decreased in the future.

### B. *Future Outlook*

It is generally recognized that there should be coverage of every population and area unit of our nation with competent, full-time local health service. Both the American Public Health As-

\* The Committee on Professional Education of the American Public Health Association publishes this report before transmittal to the Governing Council in order to permit the members and Fellows of the Association to review it and to offer criticisms and suggestions in the further consideration of the report. Suggestions should be mailed promptly to the Committee on Professional Education, A.P.H.A., 1790 Broadway, New York 19, N. Y.

This report, like all other statements of the committee on professional and technical qualifications in public health, is subject to periodic revision in order that it may be kept abreast of the best thought.

† This proposed report is a revision of the Report on the Educational Qualifications of Health Officers approved by the Governing Council on October 18, 1939.

sociation and the American Medical Association have declared in official pronouncements their interest in the complete coverage of the United States by local units of health jurisdiction, and continued efforts in this direction are to be expected in the future. Between 1915 and 1935, the number of counties in the United States with full-time local health services increased from 14 to 762. Passage of the Social Security Act in 1935 stimulated and accelerated this development, so that there are now over 1,800 counties that receive full-time health service. A third of the population, however, is still without the services of a full-time local health officer.

Local communities in the United States are now being served by approximately 1,100 full-time health officers and 1,800 other full-time administrators. Of this number over 90 per cent hold the degree of Doctor of Medicine and 20 per cent hold this degree and in addition have a postgraduate degree in public health. The majority of full-time local health officers are employed by cities, counties, and combinations thereof. In some states, district health officers on the staffs of state departments of health are assigned to local areas and render direct service. A large number of individuals qualified as health officers are employed by federal and state agencies and by voluntary organizations. The establishment of new subdivisions within health departments to provide service in the fields previously neglected by the official agencies, such as accident prevention, cancer control, general nutrition, and industrial hygiene, gives reason to believe that the future will show expansion into new fields as well as an intensification of the existing activities of the health agency.

## II. FUNCTIONS OF HEALTH OFFICERS

Many functions of the health officer are defined by statute, such as his power

to enforce sanitary laws and regulations, his responsibility for the preparation of budgets and the proper expenditure of funds. He has also the important functions of interpreting public health activities to governing bodies, coördinating the activities of official and voluntary agencies, performing the duties of a public office and of assuming a position of leadership in the community in all matters pertaining to health. Besides administrative duties and exercising leadership in his field, the health officer takes part in specific activities for disease prevention and control, using technical procedures that call for a high degree of medical and sanitary knowledge. In larger organizations the health officer may not personally render direct service but directs and evaluates the work of his subordinates and must be able to exercise both technical skill and professional judgment in so doing. The health officer's position is such that he may have broad opportunity for special studies and research in public health. In smaller localities he may perform all or numerous medical and other professional functions himself. In general, the health officer must have some training and assume some responsibility for the proper development of the official agency's activities in the following fields:

1. Environmental sanitation including water, milk, and food sanitation, insect and rodent control, and nuisance abatement
2. Acute communicable disease control
3. Tuberculosis control
4. Venereal disease control
5. Child hygiene
6. School hygiene
7. Dental Hygiene
8. Maternal hygiene
9. Public health laboratory service
10. Vital statistics
11. Public health nursing
12. Public health education
13. Industrial hygiene
14. Nutrition
15. The chronic or degenerative diseases
16. Mental hygiene



17. Accident prevention
18. Medical care administration
19. Audit and Accounts
20. Personnel management and training
21. Hospital administration

#### A. *Lines of promotion*

In large local jurisdictions and in federal and state agencies there are numerous subordinate positions, such as those of deputy and assistant health officer. Several grades of positions with administrative duties are provided, and there are definite lines of promotion. The health officer showing ability may progress from the administration of small official health units to positions of responsibility in larger organizations or larger areas, or he may advance from a subordinate position such as an assistant health officer to full responsibility for the direction of a department, agency, or district. In general, a classification of health officers includes the following titles descriptive of the area of jurisdiction or degree of responsibility: state, city, district or county health officer or commissioner; deputy commissioner, assistant commissioner or deputy health officer; assistant and senior public health officer or physician. Occasionally, an official health agency offers training positions to which a special title is given, such as apprentice health officer.

### III. THE EDUCATIONAL BACKGROUND OF HEALTH OFFICERS

The basic educational background for the position of health officer should be as follows:

1. Fundamental training in the sciences and the humanities at least equivalent to that required for a college degree in the Arts or Sciences.

2. Completion of a course leading to the degree of Doctor of Medicine\* in a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.

3. Internship of at least one year in an approved general hospital, preferably including communicable disease service.

4. Eligibility to examination for medical licensure in the state where service is to be rendered.

### IV. GRADUATE EDUCATION AND TRAINING

Graduate education and training for the position of health officer should include the following:

1. Preliminary supervised field training in a well organized health department for a period sufficient to give acquaintance with the general aspects of public health and to give the candidate an opportunity to determine his own liking and fitness for such work.

2. Completion of a program of study leading to a degree in public health of not less than one full academic year in a university approved by the American Public Health Association. The university in which such a program of study is pursued should have a well organized school or department of public health with a corps of full-time instructors recognized as leaders in their respective fields, ample laboratory, library, and other facilities, and access to official and voluntary health agencies willing to provide facilities for field training and experience.† The program of study should cover the general field of public health administration, biostatistics, environmental sanitation, epidemiology, health education, laboratory

\* Because of the trend upon the part of governmental bodies to insist upon the medical degree as a prerequisite to appointment as health officer, it is inadvisable to encourage the candidate for a public health degree to look forward to a career as health officer unless he is also the possessor of a medical degree. In making this recommendation, the American Public Health Association expressly recognizes the professional standing of non-medical persons now performing creditable service as health officers.

† See Criteria for Accreditation of Schools of Public Health Granting the Master of Public Health Degree, prepared as a basis for accreditation by the Committee on Professional Education of the American Public Health Association and published in the *American Journal of Public Health* for March, 1946.

methods, public health nursing, physiological hygiene, the socio-economic aspects of health and disease, and should be accompanied by special instruction in the application of basic principles to the functions and duties of a public health administrator.

3. An additional year of practical experience in a subordinate position is highly desirable before the graduate in public health assumes full direction of even a small health unit.

4. Full-time practical experience is an essential part of the education of the health officer, and it is recognized that great achievement can usually be attained only after an adequate period of experience. Physicians otherwise qualified who have achieved notable success and who have had many years of full-time experience in a well organized health agency may be considered as qualified to serve as health officers even though lacking formal academic training. However, it is to be emphasized that an exception to the requirements of a postgraduate course and supervised field training should be made only if the candidate, in addition to years of experience, has actually demonstrated unusual ability as a public health administrator.

5. If the health officer is vested with the administration of a medical care program, efficient performance of these functions requires knowledge and skills of a special nature. Courses of instruction in this field should be included in the postgraduate course in public health, at least as electives in the program of training of potential health officers. Instruction should include courses in the socio-economic aspects of health and disease and in methods of establishing standards of quality of medical care, budgeting requirements and special administrative techniques, including hospital administration.

#### V. PERSONAL QUALITIES

The health officer should possess the qualities of personality and character necessary to insure the successful prosecution of the scientific and administrative duties. These include such qualities as leadership, the ability to establish and maintain favorable relations with the public and his own personnel, creative ability, far sighted sound judgment and common sense, and the will to serve honestly and industriously at all times, subordinating his own desires to the best interests of the community.

ERNEST L. STEBBINS, M.D., *Referee*

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# Medical Care in Maryland\*

ROBERT H. RILEY, M.D., DR.P.H., F.A.P.H.A.

*Director, Maryland State Department of Health, Baltimore*

THE Medical and Chirurgical Faculty (the State Medical Association of Maryland), aware of many deficiencies in the present status of medical care in Maryland and of the absence of an official warrant for any group in the state to evolve a coördinated program of medical care, proposed on August 23, 1939, in an open letter to the Chairman of the Maryland State Planning Commission, that a standing committee of the Commission be formed to survey the problems of medical care for the citizens of the state. It will be noted that the medical care program of Maryland was initiated by the medical profession and thus is bound to "enlist the coöperation and enthusiasm of the medical profession."

The suggested committee appointed by the State Planning Commission was composed of representatives of all agencies interested officially or on a voluntary basis, and held its first meeting in January, 1940. In the following years a field survey and other investigations were conducted to determine the availability of proper care. The objectives of the field survey were:

1. To study certain characteristics of the population
2. To describe existing medical care facilities including:
  - a. Distribution of physicians, nurses, and dentists, and types of service rendered by each
  - b. Functions of hospitals, health, and welfare departments
  - c. Activities of other governmental, voluntary and private agencies
3. To estimate the number of indigent and medically needy and to analyze procedures followed by such individuals in securing medical care
4. To study the state health needs and give suggestions for securing more effective use of existing agencies, either by improving or extending their activities or by the organization of other services.
5. To estimate the cost of such a program



In April, 1944, the committee published its report recommending the establishment of a medical care program for the indigent and the medically needy of the counties. The report was presented to the Maryland Medical and Chirurgical Faculty at its annual meeting in April, 1944, and was approved unanimously by that group and sent to Governor O'Connor with the request that he recommend the necessary legislation. A bill providing for this plan for medical care was passed by the State Legislature and became law on February 9, 1945, when signed by the Governor. Following substantially the committee's recommendation, the bill provided that the medical care program should be administered by the State Department of Health through a new Bureau of Medical Services and that an advisory Council on Medical Care be created, representing medical, dental, pharmaceutical, and nursing professions, hospitals, public health and welfare agencies. The law also provided that the new Bureau of Medical Services should perform duties in connection with the licensing of hospitals and the administration of chronic disease hospitals which

\* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 14, 1945.

are slated for post-war construction.

To support the medical care program for the first two years an appropriation of \$200,000 per year was approved by the Legislature. This is much less than the estimated cost of an adequate program for all the counties of Maryland, but it is the general opinion that it will suffice for a beginning, especially since a general prosperity was prevailing at the time the bill was passed.

In order that state-wide policies might be flexible, allowing for adaptation to local needs in the various counties, the Council on Medical Care decided upon the creation of a County Advisory Committee on Medical Care for each county. These committees include three members named by the county medical society; one by the county or district dental society; one by the Maryland Pharmaceutical Association; the executive of the county welfare board; the chairman of the board of county commissioners or his delegate, and the county health officer, who serves as chairman. Individual counties may appoint supplementary members at their own discretion, but it was suggested that the total number of members should not exceed ten. The council recommended that health officers naming additional members choose them from among minority racial groups, the department of education, nurses, local hospitals, or public health lay organizations.

Before services are started in any county, the county committee must submit an accurate and completely defined program to the Bureau of Medical Services. Immediately after the plan's review and approval by the bureau, services may be inaugurated.

For the first few months eligibility for medical care services under this plan is confined to the recipients of public assistance from the county boards of public welfare, except in cases of emergency need, when the health officer may authorize care of medically indigent

persons. The program will be widened to include individuals not on relief as soon as a satisfactory "measuring stick" can be developed by which to judge eligibility of this group. Final responsibility for certification of eligibility rests with the county health officer. In the future he or his designated agent will determine the eligibility of the medically indigent on the basis of certain medical and social factors not yet completely defined. Among the criteria will be the applicant's income and other resources, such as home-grown food, special expenses or current debts, family size, diagnosis of the illness, probable length and cost of the illness, status of the patient, whether chief wage earner or dependent, outlook for complete recovery or the likelihood of recurrence, probable effect on future earning capacity, eligibility for care under other programs, any insurance the patient may have, and, finally, whether or not the family would have to go into debt to pay the cost of needed care.

The comprehensiveness of the local program is to be determined by each county according to the most pressing needs of the area and the amount of money available. Services may include home and office care, surgery, obstetrical services, consultation, dental care, bedside nursing care, drugs, laboratory services, and clinics. Other types of services may be inaugurated with the approval of the Bureau of Medical Services.

Funds have been allocated to the counties in proportion to the number of persons receiving assistance from the county board of public welfare. In many counties several other agencies were already providing medical care. This program will not duplicate or replace any existing services, but it may supplement them or inaugurate new services.

To simplify and facilitate administra-

tion of the state-wide program, a uniform fee schedule has been adopted for all counties. Uniformity was thought to be especially important in cases where a physician lives near a county line and practises in more than one county. Rates on the fee schedule were determined in large part according to recommendations made by County Advisory Committees. Since few counties would provide all the services mentioned in the fee schedule at the beginning, each county was advised to reproduce the part applicable to its own program and distribute it among the physicians and dentists of the area.

A system whereby expenditures could be strictly limited to the funds available was necessary. Accordingly the funds on hand for each county have been set up in monthly allotments.

The fee schedule to which the Maryland counties adhere is given below:

Home Visits—day (8:00 a.m. to 8:00 p.m.) \$3.00

Home Visits—night (8:00 p.m. to 8:00 a.m.) \$4.00

Note: If physician treats more than one patient on a home visit, he shall receive the regular fee for the first patient, and \$1.00 for each additional patient.

Office Visits \$2.00

Note: No payment allowed for telephone calls.

Hospital Visits—on medical care \$2.00

Travel—For home calls more than ten miles from the office of the physician, an additional payment of \$1.00 will be made.

Drugs—Fees for visits indicated above include payment for simple drugs customarily dispensed by the physician. If special drugs of a more expensive nature are indicated, a prescription may be written, and payment will be made direct to the pharmacist. If the physician finds it necessary to dispense drugs, the cost of which is greater than 50¢, he may enter the cost of the drug on his Medical Report in the space marked "Special Services," and additional payment to cover this will be made. Physicians are urged to avoid

the use of proprietary remedies when drugs listed in the U. S. Pharmacopoeia or National Formulary can be used.

Maternity Care—Including prenatal care, delivery, and postpartum care. Physician may refer patient to Health Department Clinic for prenatal and postpartum care if he so desires. \$35.00

Note: The law makes no provision for payment to a midwife.

Major Surgery—Including preoperative and postoperative care not to exceed \$50.00

Minor Surgery—Including preoperative and postoperative care (simple fractures, dilatation, curettage, etc.) not to exceed \$25.00

Assistant at Major Operation—Not to exceed \$10.00

Anesthetist—For general anesthetic—not to exceed \$10.00

Consultation—By local consultant \$5.00

By out-of-town specialist (Member of Specialty Board) \$10.00

Note: Mileage for out-of-town specialist will be allowed at 30¢ a mile one way, up to a maximum of \$10.00.

Dental Care—Single extractions—not to exceed \$2.00

Multiple extractions for same patient at same sitting—first tooth \$2.00

Each additional tooth \$1.00

Maximum payment for extractions for one patient \$10.00

Silver amalgam fillings, each \$2.00 to \$3.00

Silicate, or other cement fillings \$2.00

Dental x-ray, each \$1.00

Maximum fee for dental x-ray on one patient \$5.00

Other office treatments \$2.00

Full dentures—to be made of vulcanite only:

Upper or lower denture—not to exceed \$35.00

Upper and lower denture—not to exceed \$60.00

Repair of denture—not to exceed \$6.00

Home visits when essential—same basis as physicians

Oral surgery—same basis as physicians

Laboratory Service—In any program providing medical care, indicated laboratory services, including x-ray, should be available. When there are existing free services they should be used. Physicians taking x-rays in their offices may be reimbursed at cost, not to exceed a maximum of

\$5.00 per patient. X-ray or other special laboratory services may be purchased from hospitals or private laboratories on a basis of minimum rates for indigent patients.

Physicians and dentists are to submit to the county health officer a single report of services rendered to each patient. These reports are reviewed and approved by the county health officer, who sends them to the Bureau of Medical Services for payment.

If the health officer questions the accuracy or validity of any report received from a physician, pharmacist, or dentist of his county he may seek the advice of the County Advisory Committee on the matter. On the other hand, any physician or other person who has rendered medical services may present his case to the County Advisory Committee if dissatisfied with the payments received.

General policies governing the administration of the medical care program have been based upon recommendations made by the State Council on Medical Care. In determining these policies that group has given full weight and consideration to the opinions expressed by the County Advisory Committees on Medical Care and has also attempted to balance two more or less opposing principles. They recognized the dual importance of allowing individual counties the greatest possible freedom to adapt the program to their peculiar needs and, at the same time, of maintaining a reasonable degree of uniformity throughout the state in order to simplify administration, record keeping, and future evaluation of progress.

By October 25, 1945, the Chief of the Bureau of Medical Services reported that twenty-two counties had submitted final plans for their medical care programs. (As of January 1, 1946, all

counties have accepted the plan.) Programs were actually in operation in a majority of these counties. Most of the final plans included requests for consultation service. Seven of them included specialty clinics, the types most frequently requested being ophthalmology, nose and throat, and psychiatry clinics. Nearly all of the remaining counties were working on their final plans by the end of August. Since the law inaugurating the medical care program did not go into effect until June 1, 1945, and funds were not available for its administration until July 1, this may be considered very satisfactory progress.

Maryland's medical care program is a result of the coöperative efforts of physicians, dentists, pharmacists, public health authorities, and welfare agencies, who are striving to bring adequate care within the reach of those who cannot afford to pay for needed services. Attempts are being made to provide better quality medical care to the indigent and medically needy residents of our counties by providing services of physicians and dentists, clinics in specialty fields, diagnostic laboratory services, consultation service, and bedside nursing care. Policies have been formulated with the full coöperation of all the groups concerned, and a continued unified effort is essential to the success of this undertaking.

The program is a new venture in public health and one that may be accompanied by errors. It is believed, however, that vigilance to detect these mistakes and willingness to correct them will help to insure its success. Above all, needs of groups intended to benefit from the medical services must be kept in the foreground, for the entire medical care program has been established for the sole purpose of serving these sections of our population.

# Health Insurance Plan of Greater New York\*

A General Statement of Its Principles and Program

DEAN A. CLARK, M.D.

*Medical Director, Health Insurance Plan of Greater New York; on leave from the United States Public Health Service*

THE Health Insurance Plan of Greater New York has been receiving an increasing number of requests from physicians for information about its program. These requests, in the form of letters, telephone calls, and visits to the HIP office, come from physicians who are or have been in the armed forces and from many in civilian practice. Most of these physicians have expressed a desire to enter into group medical practice because they believe that, by integrating their knowledge and abilities with that of their colleagues in the form of group practice, and by coördinating their activities with other agencies, they will find increased professional opportunity and satisfaction and at the same time a greater measure of economic stability. It has been a source of encouragement to HIP to note their enthusiasm and their awareness of the necessity for improving the distribution of medical care. The Health Insurance Plan of Greater New York is, indeed, the outcome of just this awareness among physicians, employers, labor, and welfare leaders in New York City.

The HIP is a non-profit membership corporation authorized to conduct a program of voluntary health insurance in the New York City area. Although

it is frequently spoken of as the "Mayor's plan" because of the prominence of Mayor LaGuardia among its sponsors, it is a private organization and is not a part of the city government.

The governing body of HIP is a Board of Directors composed of individuals from medicine, labor, city government, social welfare, and business. With a board which is broadly representative of various groups in New York, it is hoped that HIP will develop as a true community effort and not be identified with the interests of any one group alone.

Enrollment in HIP is voluntary and will eventually be open to all employed persons resident in New York City earning less than some stated income limit, together with their dependents. At the start, however, enrollment will be by employee groups. By this method, which is in general use in the Blue Cross hospitalization plans, the employees of a given business or department are accepted for membership only if a sufficient proportion, such as 75 per cent of the entire group, agree to join. In this way, the Plan is enabled to secure a fair cross-section of the population. The HIP expects to start with approximately equal numbers of city employees and employees of private industry and their families. Premiums to cover both employees and their dependents will amount to approximately 2 per cent of the employees' earnings and an equal

\* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 14, 1945.

contribution from employers, or 4 per cent in all.

Services to be provided by HIP are to be comprehensive. They will include all preventive, diagnostic, and therapeutic medical services in home, office or center, and hospital; laboratory work, x-ray, physical therapy, hospitalization, and visiting nurse service at home. Dental care will not be included at the start, although it is hoped to bring in children's dentistry later. Drugs will not be furnished except where they are dispensed as a part of hospitalization or physicians' service. With respect to physicians' and technical services, all types of acute and chronic illness will be covered, and there will be no time limits for these services so long as the patient remains an active subscriber to HIP. The only exclusions from such services will be for drug addiction, acute alcoholism, purely cosmetic surgery, and conditions requiring long-term institutional care.

Hospitalization will be furnished through joint arrangements with the Associated Hospital Service. Limitations on length of stay and conditions to be covered for hospitalization will, therefore, be identical with those of the standard Associated Hospital Service contract, and payment to hospitals will be made directly by the Associated Hospital Service.

HIP will concentrate its efforts upon furnishing an integrated medical service of high quality. In order to do this most effectively and economically, comprehensive medical services will be supplied through general practitioners and specialists associated with each other in medical groups, in a number of different centers. HIP expects that the bulk of the services for its beneficiaries will be provided by arrangement with such group medical practice units, each including physicians of various general and special skills working together as a team for their patients' benefit.

aided by suitable assisting personnel and using office facilities and equipment in common.

Some of the medical groups being formed to collaborate with HIP will be centered at hospitals and will start with a nucleus of physicians on the present hospital staff. Specialists working at the hospital will arrange, together with either the general physicians of the hospital group or with other general practitioners, to provide the complete home, office and hospital care offered by HIP. The medical staffs of several leading hospitals and medical schools have already indicated great interest in establishing groups of the above type. In certain instances, hospital groups will include the entire staff of a hospital functioning as a unit; in others, only a portion of a hospital's staff may wish to participate, while all physicians—participating and non-participating—will continue to serve at the hospital with their present relationships unchanged.

Besides these hospital-centered groups, a number of individual physicians are seeking assistance in forming their own private groups, some loosely affiliated with particular hospitals, and others not so affiliated. These private groups would include general practitioners and specialists, part- or full-time; the hospitalized cases of such groups would be attended as semi-private or private patients in the hospitals at which the physicians of the groups have staff or courtesy privileges.

A major objective of HIP is to provide opportunities for general practitioners to work effectively in professional association with specialists and hospital groups. It is a matter of great concern to both the medical and lay members of the HIP Board that large numbers of general practitioners today are forced to practise in comparative isolation, frequently without the benefit of hospital privileges. This unfortunate



fact has resulted in professional frustration among a very sizable section of the medical profession and has contributed to such abuses as fee splitting. Through formal association with specialists in group medical practice the general practitioner will have a better opportunity to practise the kind of integrated medicine he learned to expect from his medical school and hospital training. Group practice offers similar opportunities for physicians recently graduated to develop special skills and professional qualifications under the guidance of the more extensively trained members of the groups. Such opportunities will be especially advantageous for veteran-physicians seeking to establish themselves after returning from the Services.

Under whatever auspices groups are formed, through hospital staffs or by independent practitioners, service to subscribers will necessarily stem primarily from the general physician, who will therefore be the key figure in any group. It is HIP's conviction that the general practitioner, bulwarked by the available services of the whole group and freed from the pressures of bill collection, will be able to achieve the satisfaction of being a true family medical adviser and to establish the all-important patient-doctor relationship, so infrequently achieved in large cities. In most medical groups each patient would be under the general care of one physician who would refer him to others as necessary, but who would maintain responsibility for his long-range care. As in other types of practice, patients would be free to change doctors, and doctors would be free not to accept particular patients. The experience of medical groups in other communities shows that a high degree of continuity of relationship between patient and physician can be achieved within a group.

The various groups which participate in the HIP plan may differ widely in their organization. No rigid plan of

medical group organization is envisaged by HIP; rather, experimentation with various types is to be encouraged within the bounds of maintenance of minimum standards of professional care and administrative integrity. Whatever the plan of organization of a group, all professional aspects of its services must be under the direction of physicians.

In the near future, a Medical Control Board is to be appointed by HIP, independent of its Board of Directors, composed of physicians representing HIP, the county medical societies, and medical groups participating in the HIP program, which will establish minimum professional standards to be met by medical groups wishing to take part in the program.\* HIP will be prepared to make agreements with all groups of physicians meeting these standards. The financial arrangements of each group must, of course, be mutually satisfactory to the group as a whole and to the individual affiliated general practitioners and specialists, if the medical group is to be successful. The collaborating medical groups will remain autonomous units, independent of HIP but serving insured persons by agreement with it.

It may be difficult at the start, in many cases, for complete medical groups to establish themselves because of insufficient professional and technical personnel, space, supplies, and equipment. It is hoped, however, that as many complete groups as possible will be formed and, where this cannot be done, that the nearest equivalent will be organized. Thus, while a complete medical group might be described as one which provides offices at one central location for all its general practitioners and specialists, and which is fully staffed and equipped to provide all types of home, office, and in-hospital care from that center, such completeness may not be

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\* The county medical societies are engaged in formulating a set of minimum standards for group practice.

immediately realized in many instances. Many groups, rather, may consist of a nucleus of physicians of various skills whose offices are located in a single center, and a number of physicians who spend a part of their time at the center but continue to maintain their own individual offices outside. In addition, such a group would need to make arrangements with certain highly specialized consultants who would only serve when called upon. Because of the factor of distance between subscribers' homes and a particular center, some medical groups will no doubt find it desirable also to make arrangements with practising general physicians to provide home and office care, on behalf of the group, from their own offices. In such a case, the general physician would refer to the group center patients in need of specialized diagnosis and treatment who would later be returned to the general physician with a complete report. As the number of participating medical groups increases, the distance between subscribers' residences and the various group centers will decrease, so that it will be possible gradually for more and more of the participating physicians to establish their offices in the group centers.

Initial HIP enrollment of subscribers will of necessity be limited to the number of persons who can be adequately cared for by available physician-groups. Subscribers will be asked, at the time of application for membership, to choose from among the participating medical groups, the one by which they wish to be served. This freedom of choice will, of course, be subject to the willingness of the medical group chosen to accept the subscriber for service. Amounts of payment to a participating medical group will be based upon the number of subscribers and dependents who select that group.

The HIP will go into operation by degrees. The medical groups formed at the start may of necessity be neither large enough nor numerous enough to include every physician who might wish to join such a group. The opportunity will be open from the beginning, however, to all licensed physicians in New York City to form medical groups suitable for collaborating with HIP or to associate themselves with such groups. The HIP will make a concerted effort, moreover, to see that such opportunities soon become accessible to all who desire them. The HIP wishes to foster and encourage the organization of medical groups in all parts of New York City and will gladly give all assistance possible toward their establishment.

Thus, the ultimate objective—a network of fully staffed and equipped medical groups throughout the city—can be realized through an evolutionary and orderly process. A date has not yet been set for the opening of HIP services to the public, but the interest manifested in the plan by physicians and the general public has stimulated action toward an early beginning of operations. Large industries and employee groups have indicated their readiness to enroll in such a prepayment plan as soon as the first group practise units are ready to operate. Meanwhile, much groundwork has been laid. HIP has been incorporated under the insurance laws of the State of New York; the State Legislature has passed a law permitting the city government to make deductions from payroll for city employees' share of premiums and also permitting the city, as employer, to contribute an equal share of premiums on behalf of its employees and their families; the city has appropriated \$500,000 to be used as its initial budgetary contribution toward premiums of those employees who desire to subscribe to the plan.

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## PANIC OR REASON IN DEALING WITH POLIOMYELITIS?

WHEN two or three cases of infantile paralysis are reported in an urban community during the late spring or summer, there always develops a certain feeling of public anxiety. If the number of cases shows a tendency to increase, this anxiety develops into fear and the fear into a state bordering on panic. The public press too often makes a sensation of the situation and calls on public officials, particularly the health department, for some unusual display of action.

Under pressure of this kind, health departments often respond by what the physiologist calls "random movements," in ways which have but little scientific warrant. Schools are closed, the use of swimming pools is forbidden, and a so-called "clean-up" campaign is inaugurated. This much may be justified under some circumstances, but too frequently it does not stop here. Swamps and stagnant pools are often drained and it has lately become the fashion to dust the city with DDT from the air. At nearby army and navy reservations the commanding officers are often induced to declare the city theaters and other public places out-of-bounds. Neighboring communities may refuse entry to persons from the "infected" city by establishing road blocks manned by state guardsmen who stop cars and buses to "question and instruct" the occupants.

All this is sadly reminiscent of the days of yellow fever and the shot-gun quarantine of a century ago, when people were driven by blind fear, ignorance, and superstition. It should not be tolerated today, in view of the advance in knowledge of the causes and modes of dissemination of the agents of infectious diseases, and particularly of poliomyelitis. Why, then, is reason not applied in such situations? Is it because the general public and the medical profession are not properly informed? Is it because public health officials of many municipalities have been chosen for political reasons rather than for their scientific and practical qualifications? Because public leadership does not stand against popular clamor, hoping perhaps to bring about desirable sanitary reform? Or because the public health profession is itself misled by the halftruths of scientific research as reported in a sensational press or in propaganda booklets such as the one entitled "Pollution and Polio," recently published by the Izaak Walton League of America?

Perhaps it is some mixture of these reasons. But if we are to establish the rule of intelligence in dealing with this disease, it is fundamental that the public health profession itself, at least, be not misled. In view of present-day knowledge, the following statement from an editorial\* in an engineering journal of high standing is certainly a dangerous half-truth: "Polio may soon be recognized as a problem of sanitation and the sanitary engineer may take the task of building defenses against the spread of this dread disease, just as he did against typhoid. Now that polio is labelled by scientific research as a filth disease, spread by human wastes, the sanitary engineering profession must assume some responsibility for its control. If the virus is carried by polluted waters, and spread by the fly, as the present status of research seems to indicate, the edict becomes reasonably clear: we must prevent pollution and stamp out the fly."

It is not perhaps surprising that engineers should take this view since the concept that infantile paralysis is a water-borne or an insect-borne disease has not lacked some tacit approval from competent epidemiologists. Yet, all of the evidence which has been accumulated since the studies of Wickman, and including the most recent observations confirmed by animal inoculations, have tended to establish firmly the concept that poliomyelitis is exclusively a human infection and that the virus is passed rather directly from an infected person to a non-infected susceptible individual. The frequency with which contact-transmission can be traced has varied widely according to the definitions and criteria adopted, the skill and persistence of the investigator, and the circumstances of occurrence. If inapparent and subclinical infections are considered, as well as clinically recognized cases, frequency of traceable contact is of the same order as that which can be established in studies of diphtheria, scarlet fever, meningococcus meningitis, or bacillary dysentery. It is not yet clear whether effective contact involves transmission through the air by droplet nuclei, droplets or sputum particles, or mechanical transmission from objects contaminated by oropharyngeal secretions, or by feces to hands (and occasionally by flies) and thence to food to mouth—or by both routes.

Evidence that the virus may travel from one person to another by more remote channels is lacking. How long the virus may survive in sewage and sewage polluted water is unknown and undoubtedly variable according to conditions. Up to the present time there is no more reason to believe that the virus of poliomyelitis in sewage is of importance in transmission than to believe that the presence of tubercle bacilli in feces and sewage is of importance in the transmission of tuberculosis; or that the presence of *Pasteurella tularensis* in the streams of western Montana is of importance in the transmission of tularemia.

Although epidemics of poliomyelitis have been carefully investigated by numerous epidemiologists over many years, there is no record of this disease having been spread by a common water supply. There are a very few instances—a matter of four or five—in which small groups of cases have been associated with a common milk supply, and none in which any other common food has been definitely incriminated as the medium of distribution of an explosive outbreak. Repeated investigations have failed to demonstrate a significant correlation between environmental sanitation and the occurrence of cases. The virus is easily transmitted from person to person under the conditions of ordinary contact in everyday life. In a matter of six to eight weeks, an epidemic affecting a considerable pro-

\* Cohn, Morris M. The Vicious Virus. (Editorial) *Severe Works Eng. & Munic. Engr.* 17:142 (1945), 1945.

portion of the people usually runs its course, whatever the standards of living and sanitation may be.

Until new evidence is forthcoming, public health workers would be well advised to stick to the simple and well established concept that poliomyelitis is principally if not entirely spread by direct and intimate personal contact. The apparent mystery in its behavior arises from the fact that so large a proportion of the persons who harbor the virus are suffering from inapparent or subclinical infections, and are thus entirely unaware of their infectious state. Reduction in spread may possibly be effected to some degree by isolation of cases and selective restriction of familial associates. During an epidemic, advantage may possibly accrue from reducing the total number of daily contacts between individuals, but this should be regulated on a voluntary basis rather than by legal compulsions which disrupt community life. While municipal cleanliness and sanitation are always highly desirable, there is no reason to believe that improved methods of sewage treatment and disposal, more rigid standards for the purification of water supplies, or the dusting of DDT over a city from aeroplanes will have any measurable effect on the incidence of infantile paralysis.

## MEDICAL CARE OF THE INDIGENT IN MARYLAND

ARTICLES in this issue of the *Journal* by Dean Clark on the Greater New York health insurance program and by R. H. Riley on the Maryland Medical Care Program represent valuable contributions to the practical techniques of organized effort in this important field. The Maryland plan is of special interest to our readers. It covers only one section of the population, the indigent and the "medically indigent"; but, in this limited field, it is a pioneer attempt at the orderly integration of medical care with the official public health program.

The initiative in developing this project was taken by the Medical and Chirurgical Faculty of Maryland (corresponding to the state medical society in other states) which, in 1940, asked the State Planning Commission to appoint a standing committee (including public representatives), to prepare a program. This program was presented to the State Legislature in 1945 and promptly adopted. Both the State Medical Society and the Planning Commission deserve great credit for prompt and efficient action.

The law provided for the establishment of a Bureau of Medical Services in the State Health Department and for the administration of the program—under the direction of that bureau—by the county health departments. Thus, the importance of essential decentralization to meet local conditions is recognized; and professional guidance is assured by the appointment of Advisory Committees of physicians, dentists, pharmacists, welfare officers, and others under the chairmanship of the county health officer. This is the sort of organization contemplated in the Wagner-Murray-Dingell Bill for health insurance in a wider sense.

The Maryland Plan is designed primarily to serve persons on public assistance but the "medically indigent" may be included, on a basis to be defined by the county health officer. The definition of this group by the health officer rather than a welfare officer is a distinct forward step.

The program of services to be provided is, in theory, a wide one, including full medical care, dentistry, drugs, and laboratory service. Hospitalization is cared for by funds already at the disposal of welfare departments.

Payment is to be made on a fee-for-service basis, according to a detailed state-wide fee schedule. The county advisory committees "may serve as a 'Court of Appeal' for doctors or patients who have a complaint to make." The financial soundness of the program will depend on the success of the county health officers and the advisory committees in regulating services and charges. It should be borne in mind that insurance plans (and this is, in essence, an insurance plan for one group in which the state provides the premiums) based on fee-for-service have historically been extremely liable to abuse in individual cases and have commonly resulted in progressively mounting per capita costs. The budget contemplated by the Planning Board is based on slightly less than \$11 per patient served.

The first Annual Report of the Bureau of Medical Service of the State Department of Health has just come to hand. By January of the present year, all the twenty-three counties of the state had entered into the program. The report, however, deals only with the last six months of 1945.

In this preliminary period 2,101 patients were served, at a cost of \$13,407. (The total available appropriation is \$160,000 a year.) Of the 2,101 patients, 111, or 5.3 per cent, were "medically indigent"; the rest were public assistance cases. It is of special interest to note that 49 per cent of the clients were over 60 years of age. Dr. Riley states that with regard to dental care and bedside nursing care "the surface has hardly been scratched"; and that the establishment of consultation clinics in such specialties as ophthalmology, otolaryngology, internal medicine, and psychiatry is an urgent need.

Our ears have been deafened by philosophical polemics about the ideology of medical care. The way to learn how to provide such care is to provide it; and develop techniques on the only sound basis, that of practical experience. We shall learn much in coming years from the operation of the Maryland program. It is certain, however, that the chances of reasonably adequate medical care for the indigent are brighter in Maryland than in most of the states of the Union. If there are exceptions to this generalization we would welcome descriptions of alternative programs in this *Journal*.

## THE GUNN-PLATT REPORT

A VIGOROUS attack by Donald B. Armstrong<sup>1</sup> on the National Health Council study of "Voluntary Health Agencies" raises questions which call for serious analysis—on both an empirical and a philosophical plane.

Few students of the Gunn-Platt report will agree with Dr. Armstrong's conclusions that the problems raised by this document "seemed hardly to require the costly and intricate study undertaken by the self-created committee of the Council or five years of scurrying around the country with an expenditure of upward of \$100,000." The first edition of *Voluntary Health Agencies* has been exhausted and a second edition is now being rapidly distributed. From one end of the country to another, councils of social agencies, public health nursing groups, associations of board and committee members are studying the report page by page and holding state and local conferences for discussion of its findings. It can be said with truth that no other document published in a quarter-of-a-century has exerted such far-reaching effects on constructive thinking with regard to the functions of the voluntary health agency.

The best answer to such criticism will be a re-study of the report itself. We have reviewed its major findings in some detail in an earlier issue of this *Journal*.<sup>2</sup> The major assumption of the Armstrong discussion is that Gunn and Platt advocate a "merger" of voluntary health agencies, which is not the case. The report clearly abandons this goal (which has had powerful backing in the past). Aside from its invaluable suggestions as to the revitalizing of the individual health agency, which involve perhaps its most important contribution, the report makes two major suggestions with regard to coöperative action between different agencies. First, it recommends that "a serious effort be made to determine the soundness of unifying in one strong organization all related health promotional voluntary agencies in a city and in a state, with appropriate emphasis on all aspects of a unified health program." The second major recommendation looks toward a "pooling of the present separate and competitive and confusing appeals of the voluntary national health agencies into a unified nation-wide campaign" for fund raising. The report recognizes that the agencies which now have highly profitable fund raising techniques (for the campaigns against tuberculosis, infant paralysis, and cancer) are not likely at present to join in such a program; but the suggestion will probably be welcome to agencies in the fields (such as social hygiene and mental hygiene) which are now sadly lacking in resources.

What Dr. Armstrong himself advocates is much less clearly defined. He suggests that "arrangements might be made whereby they (venereal disease efforts) could share in the more generously financed movements, especially those with unusually successful money raising devices, such as those used by the National Foundation for Infantile Paralysis, or such as the seal sale so effectively utilized by the National Tuberculosis Association." But, in the very next sentence he adds, "Of course it should be realized that criticism of the well-to-do agencies because of their success in fund raising, and an effort to encourage or force them to carry their impoverished colleagues might really if pressed too far, induce an element of public deception and might also actually signify an extension into this field of the prevalent 'soak the rich' policy."

Again, Armstrong's whole argument is based on the fear of too strongly centralized a Health Council. Yet he proposes the creation of a new American health league which should include not only the present Council agencies but a number of medical, hospital and dental groups to undertake political action on a grand scale, to fight for certain particular policies in medical economics and—specifically—to oppose the American Public Health Association program for national health.

In one paragraph he says that "any soundly American organization will want to maintain the independence nationally of the major voluntary movements but will at the same time wish to encourage a coöperative federation or conference procedure encompassing all the important national health and medical agencies. It will want to develop on a state and local basis the proper machinery for the integration of effort, whether this is a council, a federation, or an actual consolidation of agencies." This would seem to be an admirable statement of the essential objectives of the Gunn-Platt report; but all the rest of the article gives the impression of an attack on that report.

The spirit and temper of Dr. Armstrong's discussion seems unfortunate. Here are fighting words quoted almost at random from its context: "contrary to the American traditions and possible only in a regimented society"; "Hitler or Stalin could force it and no doubt would"; "Community organizers who are

communistically inclined"; "the same collectivistic ideology and the same desire for organized monopoly"; "the regimentation of medicine"; "wartime bits of collectivism and statism"; "European collective and socialization procedures"; "the same formula has more recently been demonstrated by the Facists in Italy, the Nazis in Germany and the Communists in Russia"; "the road to communistic hell is paved with well-intentioned socialistic or collectivistic experimentation"; "natural fermenters of statism on the medical level." Throughout, the ideology of Hayek is dominant; but Dr. Armstrong appears not to have read the more recent—and most effective—confutations of that writer by *Finer* and *Wootton*.<sup>3</sup>

Particularly regrettable are Dr. Armstrong's references to Professor *Gunn* and Dr. *Platt* as "laymen under the direction of a committee also under lay leadership"; and to "clever 'leftish' lay leadership in the American Public Health Association." Dr. Armstrong should know that both the authors of the report were holders of degrees in public health and were not laymen in this field; and that no one can be a Fellow of the American Public Health Association who is not a professional public health worker. The physician who lacks special training in public health is a layman in our profession; and the engineer or nurse who possesses such training or experience is not.

The discussion of a proposal for voluntary coöperation in fund raising by a group of agencies and for experimentation in coördinated service on a local level as communistic and totalitarian is unjustified. Our Community Chests are expressions of the soundest type of democratic coöperation—not steps on the road to Moscow. Such phrases as those cited are not only nonsense, but dangerous nonsense. Man has primitive instincts still; and appeal to the endocrines can easily override the intellectual faculties. The unfortunate person who looks for a communist under the bed every night is in need of psychiatric counselling if he is sincere, and of some other form of social treatment if he is not.

Curiously enough, Dr. Armstrong falls into precisely the philosophical error which he strives to combat. He is concerned about the danger of ideology; but his entire article is dominated by an ideology of his own. It is quite as illogical to condemn any form of coöperative action whatever because of the fear of communism as it is to favor every form of coöperative action because of the love of communism. Webster's definition of "ideology" (the first definition being technical and metaphysical) is as follows: "Visionary speculation; idle theorizing; also an impractical theory, or system of theories." In general, unfavorable international comparisons are dangerous. Yet it may fairly be said that the tendency to regard phenomena from the viewpoint of their relation to a preconceived theoretical philosophy is more developed in Europe than in the United States. Here, we are more accustomed to a practical and empirical approach. Dr. Armstrong is un-American in his tendency to evaluate all programs, not on their merits, but on the basis of their assumed relationship to his own abstract anti-collectivist philosophy.

In a recent magazine article (which is worthy of reading by every thoughtful person) *Charles Morgan*<sup>4</sup> points out that "the tendency of our time is for human thought, alarmed by the rapidity of change, by the seeming dissolution of society into a condition of flux, to congeal into stiff, uniform chunks of fierce and frightened orthodoxy." He illustrates this fact by the reaction of his own people to the confusion which arose in Greece after the Germans were driven out. He notes that "when the trouble began, a great part of British opinion, instead of suspending judgment and waiting to ascertain the facts, instead of trying to



discover patiently where the true interest of freedom lay, aligned itself 'hastily on the Left or on the Right, and began to think and talk and write for or against one or other of the authoritarian ideologies. It was as if the minds of the British people had already begun to stiffen, to congeal into two clots of opinion, as if we had begun to lose our independence of judgment, our resilience of imagination, our power to refer each new problem, not to some rigid rule, but to our own consciences, our own sense of compassionate justice. It is the radical principle and the invariable practice of all authoritarian systems to freeze imagination, to prevent men and women from thinking for themselves. It is the radical principle of art to unfreeze the imagination and to enable men and women to think for themselves."

Morgan is discussing the responsibilities of the artist. It should be even more the responsibility of the man of science to "unfreeze the imagination," bound by emotion or tradition "and to enable men and women to think for themselves."

The decision as to the best method of organizing our voluntary health agencies is not an ideological choice between anarchism and communism. It is a concrete practical problem of organization to be based on reason and common sense. There can be no totalitarian threat to the liberty of the agencies concerned because any action whatever which they take will be taken by themselves, so far as they are convinced of its wisdom; no dictatorship except the dictatorship of their own consciences. The only possible menace is the threat to the freedom of the spirit involved in the substitution of appeals to emotional ideology in place of rational empiricism. The question is simply one of deciding how far it is wise to go in voluntary coöperative planning for the common good. The Gunn-Platt report is of inestimable value in helping us to decide that question.

#### REFERENCES

1. Armstrong, D. B. Facts and Fallacies in the Integration of National Voluntary Health Agencies *J.A.M.A.*, 131:587 (June 15), 1946.
2. A Challenge to the Voluntary Health Agency (Editorial). *A.J.P.H.*, 35:1070 (Oct.), 1945.
3. Finer, Herman. *Road to Reaction*. Little Brown & Company, 1945.
4. Wooten, Barbara. *Freedom Under Planning*. University of North Carolina Press, 1945.
4. Morgan, Charles. The Artist in the Community. *Yale Rev.*, 35:594 (Summer), 1945.

## Credit Lines

### NEW HAMPSHIRE CITIZENS' COUNCIL FOR THE GENERAL WELFARE

After a year of discussion by a Committee of Citizens of New Hampshire and selected outside advisers on the desirability of developing a state planning organization in the fields of health and welfare, the New Hampshire Citizens' Council for the General Welfare was incorporated as a non-profit agency in December, 1945. Its stated purposes are:

To study the state, its welfare and health problems and interrelated problems such as education, and the adequacy of provisions and resources for meeting them; to further coördination and high standards in the operation of resources and the development of new services; to give information and counsel to the organizations involved when they desire it; to advise local communities; to serve as an information center and clearing house in matters of health and welfare; to make information available to the governor and legislature on matters in these fields; to maintain common services; to serve as a vehicle for concerted action for groups with similar interests within the scope and spirit of this organization.

The offices of the agency are at 3 North Main Street, Concord, N. H.; its Executive Secretary is George P. Drowne, Jr., a trained social worker.

Apropos of this development the National Community Chests and Councils (15 East 44th Street, New York 17) has recently prepared a memorandum on community organization for health and welfare on a state-wide basis. It declares that, "The development of co-ordinating, planning, and joint action programs on a state-wide basis in the field of health, welfare, and recreation seems destined to be one of the distinguishing features of the current period in community organization history." It finds that, "All but a half dozen states have embarked upon some

kind of program for handling one or more aspects of the community organization job." Its report includes a more detailed analysis of recent movements in Massachusetts, Michigan, New Hampshire, Ohio, and Rhode Island, as well as an appendix summary of developments by states.

### MEDICAL WOMEN'S ASSOCIATION JOURNAL

The *Journal of the American Women's Medical Association* made its bow in April, 1946 (Vol. 1, No. 1). Its editor is Dr. Elise S. L'Esperance, long noted for her work in cancer prevention in both Memorial Hospital and New York Infirmary for Women and Children in New York. Of the 37 members of the Editorial Board, 8 are from countries other than the United States.

The first issue is devoted to Cancer, since April was designated as Cancer Month by the President and the Congress of the United States. Subsequent numbers will emphasize other special topics.

This *Journal*, planned for monthly publication is well printed on good paper, with excellent photography. The JOURNAL through Credit Lines welcomes the *Journal of the American Women's Association* to the fellowship of professional journals.

### HEALTH DEPARTMENT PUBLIC RELATIONS

"The problem of public relations is that of getting affirmative responses," says Professor Harry Overstreet, in *Public Relations Practices of a Health Department (Michigan Public Health, Dec., 1945)*. He summarizes six ways of getting "yes" responses to proposals of the local health department—the way of friendliness, of sympathetic un-

derstanding, of the right word rather than the terrifying professional jargon, of lay involvement in projects, of a non-authoritative approach, and of a knowledge of how to make ideas stick by relating them to the individual's life. An article well worth reading by all staff members and not merely those in official charge of public relations. Professor Overstreet reminds us that the telephone operator and the receptionist are the first in the line of contact between department and public.

#### PRESCHOOL PHYSICAL EXAMINATIONS IN HINSDALE, ILL.

Hinsdale, Ill., with a population of approximately 7,500, has a Kindergarten Summer Round-up program for the health of school children. Its 8 year results have been described for Credit Lines by Naidene Goy of the staff of the Hinsdale Township High School.

As a result of the 1946 campaign, 90 per cent of the children entering the public schools this fall will have had complete physical examinations and a complete medical record for the guidance of the school health program. The 1947 goal is for a 100 per cent record.

This is a community project originally sponsored by the Parent Teachers Association. Local physicians and dentists, the Hinsdale Retired Nurses Association, the Du Page County Nurses, and the Hinsdale school nurse have all coöperated in the program which is extended to both public and parochial schools.

A local Union Church provided housing facilities for the clinical and clerical services in 1946. The child's physical examination was used as well to orient him in his new life as a school child. It was the first step in his preparation for school. Following the examinations the children were invited to a kindergarten party. There they met their future kindergarten class-

mates, while their mothers met the kindergarten teachers and the school principal and supervisors. A total of 120 children were examined. Local Girl Scouts delivered registration blanks to each home.

The program modestly begun eight years ago, under Parent Teachers Association auspices, was accelerated by the passage of the Illinois law which requires birth certificates for school admission and requires physical examination of the child during the fifth grade and during high school years.

#### MIGRATION AND IMMIGRATION

Credit Lines is indebted to the National Social Welfare Assembly for two timely pamphlets about migrations arising out of the late war. One is *Entrance into the United States of Alien Wives, Minor Children and Fiancées of United States Servicemen or Veterans*. This interprets many of the legal problems of alien dependents of service men. It includes "a summary of laws and regulations which affect the right of such persons to admission to the United States." (Available as ARC 1271 from the American Red Cross, Washington, D. C.)

The other is *People on the Move*, by Social Security Board Chairman A. J. Altmeyer. It discusses trends in residence and settlement laws in relation to mass migrations of recent years to war industry centers. (Social Security Board, Washington 25, D. C.)

#### LABOR AT THE NATIONAL CONFERENCE OF SOCIAL WORK

The new atmosphere in the working relations of labor and social work was graphically illustrated at the recent conference of social work in Buffalo. According to one tabulation, 14 different representatives of labor were on the Conference program. Both AFL and CIO were represented in the discussions of the Community Organiza-

tion and Planning and the Industrial and Economic Problems Sections. Other sections with trade union discussants were Health, Public Welfare, and Administration. The Joint Committee on Trade Unions in Social Work had three afternoon sessions during the Conference, and the National CIO Community Services had two.

#### ALCOHOLISM—TWO CURRENT PAMPHLETS

The Research Council on Problems of Alcohol has published a useful pamphlet, *The Scientific Approach to Chronic Alcoholism*. Made up of three parts it discusses briefly the problem of alcoholism and the present direction of remedies; analyzes the program and resources of the Council itself, and summarizes other activities—official and voluntary—in the field of alcoholism control. It may be ordered from the Research Council on Problems of Alcohol, 60 East 42nd Street, New York 17. There is a charge for quantity distribution.

*Alcoholism Is a Sickness*, by Herbert Yahraes, was published in June as *Public Affairs Pamphlet No. 118*. In popular form this gives the scientific facts about the disease of alcoholism and recommends the rational and humane steps the public needs to take on this health problem. The most important preventive measure suggested is "the building of a society in which the individual is better fed and housed, has better medical care, has better facilities for mental hygiene, has fewer money worries, and has the facilities and the encouragement to engage in recreational activities besides drinking." (Available from Public Affairs Committee, 30 Rockefeller Plaza, New York 20. for 10¢, or less in quantity.)

#### CONTROL OF FLIES IN THE NEW YORK MILK SHED

The recently published pamphlet, *The Use of DDT in the Control of*

*Flies on Dairy Farms*, is an interesting example of inter-community, inter-agency, and inter-state coöperation. The procedures outlined were formulated by Professor H. H. Schwardt of Cornell University's Department of Entomology.

The instructions are clear, simple, and definite and are suitably qualified for the small dairy operator. The pamphlet was sponsored and the methods were approved by the New York and New Jersey State Health Departments, the New York City, Newark, Jersey City, Westchester and Nassau County Health Departments, the Connecticut State Dairy and Food Commission, and the Vermont State Department of Agriculture. A uniform fly control program throughout the area is thus possible.

The Milk Dealers Association of Metropolitan New York has printed 100,000 for distribution at cost to operators of country milk plants. Dairy farmers in the milk shed will receive free copies from the plant operators.

#### DENTAL CARE IN NORTH CAROLINA

*Distribution of Dentists in North Carolina* reports that the accumulated dental needs of the state would require the services of the current 926 dentists of the state for a period of 12 years without any allowance for current needs. Other facts pointed out are that the state ranks 33rd in number of persons per dentist, that North Carolina residents are under-represented in dental schools of the country, that the state has no dental school, that rural areas are in a worse plight than urban and Negroes than whites.

The author, Selz C. Mayo, Professor of Rural Sociology, of the North Carolina State College (Raleigh, N. C.) ends his report with a discussion of the legislative proposals "that have been made to improve this deplorable condition." He notes that "The North Carolina Hospital and Medical Care

Act" of 1945 makes no mention of dental care. He analyzes the dental provisions of the Wagner-Murray-Dingell Bill, the dental research provisions of S. Bill 190 which would establish the National Institute of Dental Research and S. 1099 which would provide assistance to the states in developing and maintaining health programs.

#### CLEVELAND STUDIES APPENDECTOMIES

An analysis of 19,399 operations for appendicitis occurring in 16 Cleveland hospitals during a 12 year period has recently been published. This is said to be the largest series of operations for appendicitis ever studied anywhere.

The study was designed to throw light on such questions as age, sex, and delay in having the operation upon the fatality rate, as well as the effect of anesthetic, type of incision and drainage.

The data were collected by the Cleveland Appendicitis Survey Committee of the Cleveland Academy of Medicine with the financial aid of the Cleveland Foundation. They were analyzed by Howard Whipple Green, Director of Research and Statistics of the Cleveland Health Council—Green, Howard Whipple, and Watkins, Ralph M., M.D. Appendicitis in Cleveland, Cleveland Health Council, 1001 Huron Road, Cleveland, Ohio.

#### CHICAGO HEALTH EDUCATION HANDBOOK

The Health Education Committee of the Chicago Council of Social Agencies has just published a *Health Education Handbook for Chicago and Cook County*. This describes the health education services of 34 agencies of the city, county, and state available to Cook County area, and the conditions under which the services are available. There are also an index by specific health topics, a list of selected books on health

education principles, methods and materials, a list of periodicals and abstracts, and the libraries in which they can be found, and information about health and educational films. This publication could easily serve as a model of similar handbooks in other areas.

The Elizabeth McCormick Memorial Fund has made possible its free school distribution.

#### LEARNING OUTSIDE OF BOOKS

Three new publications in the CCC "School Program" series have just been announced. The series is designed narrowly as a year-round interpretation of community programs but broadly as an extra-curricular means of education in citizenship. They are: *Building Together*, a selected reading list for four age groups and including both prose and poetry; *Field Trips to Health and Welfare Agencies*, which outlines how a successful program of this kind may be set up; and *Student Speakers for Community Chest and Council Interpretation*. This last, based on the theory that "we learn by doing," gives specific help for developing a corps of student speakers to interpret community programs but also to provide active responsible experience in community participation for high school youngsters. Available from Community Chests and Councils, Inc., 155 East 44th St., New York 17, at 15¢ for the reading list and 50¢ for each of the other two.

#### SHAREHOLDING IN HEALTH

This is the title of the ten year history of the Public Health Lay Council of Montgomery County, Maryland (8720 Bradley Boulevard, Bethesda 14, Maryland). This county, with a 1940 population of nearly 85,000, has had a full-time county health officer since 1923. The present report tells how the Public Health Council has played a part in the development of the county service. It has much to interest other Lay

Health Councils organizing in other counties to crystallize and further the aims of the local health departments.

#### NORTH DAKOTA HEALTH NEWS

With Volume 1, No. 1 of North Dakota *Health Quarterly News* in March, 1946, North Dakota joined the states whose health departments publish periodically a bulletin in order to acquaint their public with current happenings and future plans.

#### GROUP PRACTICE OF MEDICINE

Continuing its series of thumbnail histories of current medical-hospital problems, the May *Hospital Survey News Letter* (Commission on Medical Care, 22 East Division Street, Chicago 10) outlines briefly how group practice came into being. The résumé points out both the advantages and problems of this method of providing medical care. It indicates further that the hospital is a natural center in which to organize group practice.

#### PUBLIC HEALTH PROVING GROUND

*Eight Years of Public Health Work*, Jones County, Mississippi, 1937-1944, by Dr. Harry E. Handley and Carolina R. Randolph of the Commonwealth Fund (41 East 57th Street, New York 22, 50¢) tells the 8 year story of the health department of this county of about 50,000 population. The department was organized with the help of the Commonwealth Fund which for five years supported the basic budget on an annually decreasing basis while the community learned the value and technique of providing its own services. Since providing the funds for the new health center building in 1942, the Fund has supported special projects only. In 1944 local and state funds were each nearly three times the amount that they were in 1934.

The report includes an appendix of statistical tables giving vital statistics

data for varying periods from 1923 to 1944. There can be traced the history of maternal and infant mortality rates, death rates from communicable diseases, and many other relevant items.

#### CITY-COUNTY COÖPERATION ONCE MORE

*Public Management* for June reports that in Eugene, Ore., five separate taxing units have set up an informal administrative council to coördinate financial and construction programs for the next 10 years. The five units are the cities of Eugene and Springfield, Lane County, and two school districts. Each of these units will prepare a 10 year program as a basis for an overall study of the combined tax requirements. Initial meetings of the administrative council have indicated the possibility of mutual agreement on personnel policies and the exchange of equipment. The Council will also discuss priorities and methods of financing of the various projects planned.

#### LOW-COST GUIDANCE MATERIAL

Science Research Associates (228 S. Wabash Avenue, Chicago 4, Ill.) has recently published *The Hundred Best*. It is a list of free and inexpensive guidance material representing 41 vocational fields from accounting to writing, including health. In the latter category is listed the Association's Employment Opportunities in Public Health.

Of the 100 items, including non-vocational material as well, 46 are free; the total cost of all the others is \$8.19. The list itself is free to subscribers to the Occupational Information System; to others there is presumably a small charge to cover costs.

#### KANSAS PUBLIC HEALTH ASSOCIATION

The Kansas Public Health Association at its Annual Meeting in June used ingenious methods to recognize

the contributions to public health of Samuel J. Crumbine, M.D., who was the Pioneer Health Officer of Kansas from 1904 to 1923. The place card reproduced the "Swat the Fly" poster of Dr. Crumbine's 1906 campaign and the death's head common drinking cup representing another of his crusades. He was presented with a reproduction of a brick of a sidewalk in Topeka bearing the slogan "Don't spit on the Sidewalk" representing still another crusade.

#### RECONVERSION OF WARTIME VOLUNTEERS

The *Survey Midmonthly* (112 East 19th Street, New York) continues to read the pulse of social movements. Its May issue has two articles on volunteers, one by the Editor, Bradley Buell, called "Volunteers Ahoy" and the other "Across the Continent" by Dorothy de la Pole, head of Community Chests and Councils volunteer service.

These two articles, available in an eight page reprint (*10 cents per copy*), were inspired by Citizen Participation in Community Services, a Survey of Volunteer Services in New York City, made by the New York War Fund after V-J day. The findings of this study and Mr. Buell's discussion are valuable to every organization concerned about the future rôle of volunteers. That there is need for volunteers in a peacetime program, that volunteers are available, and that their use requires special planning and coördination are emphasized.

Miss de la Pole's article ranges beyond the New York scene to report volunteer trends the country over, and the new ideas on how to attract and use them in the post-war period.

#### WORTH ACQUIRING

*Routine Admission Chest X-Ray in General Hospitals and Techniques of Group Chest X-Ray Services*—These

two motion pictures on tuberculosis case finding with miniature film mass radiography of the chest have just been completed for the U. S. Public Health Service under the supervision of its Tuberculosis Control Division. They are teaching and orientation films for an audience of professional, technical, or administrative personnel, or trainees, in the fields of public health, medicine, and hospital care. The film prints are 16 mm size, black and white, with sound. Available for short term loan from Tuberculosis Control Division Consultants in the District Offices of the U. S. Public Health Service. Prints may be purchased from Castle Films, Inc.; 30 Rockefeller Plaza, New York 20, at \$23 and \$21 respectively.

*Veterans on the Move: Report on Transient Veterans* is the third bulletin prepared by the National Committee on Service to Veterans (National Social Welfare Assembly). It is a brief outline of community planning and resources necessary to meet the problems of transient veterans. Available from the National Social Welfare Assembly, 1790 Broadway, New York 19. Single copies, *10 cents*; 100 copies or more, *5 cents* plus postage.

*The Pale Horseman*—Pestilence often aggravated by famine is "The Pale Horseman." The above title is the name of a 16 mm sound film prepared to show the horrors and dangers of disease and famine produced by the past World War. It is an excellent propaganda film for introducing a conference or public meeting to consider famine relief or medical assistance for war ravaged countries. Actual scenes of suffering people and destroyed cities described in the sound accompaniment make up the film.

Running time is 19 minutes. Further information as to rental points, charges, etc., can be obtained from Brandon Films, Inc., 1600 Broadway, New York 19, N. Y.

## BOOKS AND REPORTS

*All books reviewed in these columns may be purchased through the Book Service. All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.*

Prevention, First Aid and Emergencies—By *Lyla M. Olson, R.N.* Philadelphia: Saunders, 1946. 591 pp. Price, \$3.00.

Here is a textbook on general first aid that should appeal to any person offering a course in this field for adults. It contains a wealth of information which the author had originally assembled in preparation for lectures and demonstrations given to student and graduate nurses of the Kahler School of Nursing. The treatment accorded the subject matter is, however, of such nature as to indicate broad usage by adult groups interested in a sound educational approach to the solution of first aid problems.

While for the most part the author has emphasized sound preventive methods and first aid care of injuries, the reviewer cannot agree that it is the function of a first aid text to recommend specific forms of medical treatment such as massage, whirlpool baths, infra-red heat, the use of novocain, and surgery. While conceding that the border line between first aid care and remedial medical treatment may occasionally be ill defined in some instances, the reviewer submits that medical therapeutics are still within the province of a textbook of medicine.

The author, however, deserves special commendation for the comprehensive nature of the subject matter touched upon. Especially valuable is the Instructor's Guide and Suggested Readings. Of questionable appropriateness is the section on "The Removal of Stains." This text goes a long way in satisfying the needs of the non-

professional first aid student. It will, undoubtedly, come into widespread use in nursing schools, but the reviewer is of the opinion that its use as a textbook by other non-professional persons would be inadvisable.

EARL E. KLEINSCHMIDT

Doctors, Drugs and Steel—By *Edward Podolsky, M.D.* New York: Bernard Ackerman, 1946. 384 pp. 20 illus. Price, \$3.75.

This book is indeed an adventure in medicine, which is most attractively written, and has a direct appeal to the layman as well as to the physician. While it is limited in scope, in one volume nevertheless it tells a story of many of the advances which have occurred in medicine during the last few years.

It points out not only some of the past accomplishments in the field of medicine, but anyone reading this volume cannot help but feel the influence of medicine in our world today, and the possibilities which exist in continued medical research. It is indeed a most worth while contribution in our present-day thinking regarding the relation of medicine to our national well-being.

T. LYLE HAZLETT

Job Placement of the Physically Handicapped—By *Clark D. Bridges.* New York: McGraw-Hill, 1946. 320 pp. Price, \$3.50.

This book as the author states has been written for the layman whose duties include responsibility for the effective use of workers. As such it is intended for the employer, the super-



visor, the personnel manager, the safety engineer, and others who hire, select, place, and supervise man power. A practical guide to constructive action in the rehabilitation and employment of disabled and handicapped workers is also presented by the author.

The first part of the book is devoted to a presentation of the most recent development in matching the worker with the job; the second part of the book contains a discussion in nontechnical language of the more common disabilities and a description of the restrictions imposed upon the worker by each disability. If this book were read by both the industrial placement officer and the physician, each would have a better understanding of the other's problems, procedures, and terminology. Valuable reference material is included throughout the text, as well as in the appendix.

LOUIS LONG

**Manual for Water Plant Operators**—By A. A. Hirsch. Brooklyn: Chemical Publishing Co., 1945. 368 pp. Price, \$6.50.

The author is to be commended for including a great deal of information in a brief space, in language readily understandable by the average water plant operator. Clarity of discussion, however, is at times sacrificed for brevity. Section 4 on the distribution system has little to do with operation problems and could be eliminated. The chapters on plant arithmetic, factors and water plant data are excellent as is the one on the value of maintaining complete records.

Some errors and omissions can be noted. The discussion of filtration is limited to control of rapid sand filtration, although pressure and slow sand filters are still used. The section on chlorination is based on a misconception of the value of active as compared with combined chlorine residual. Use of carbon for taste and odor control is stressed to the neglect of other methods.

The author states that manganese interference with the OT test may be determined by boiling the sample or by allowing a portion to stand overnight for dissipation of chlorine residual, two methods that give inaccurate results. Chapter 21 on operation during war emergencies seems out of date; much more information should be given on protection from damage caused by natural disasters. F. W. GILCREAS

**The Origin and Development of Group Hospitalization in the United States, 1890-1940**—By J. T. Richardson, Ph.D. Columbia: University of Missouri, 1945. 101 pp. Price, \$1.25.

Present-day Blue Cross hospitalization plans had their origin in industrial and single hospital plans in the period 1890 to 1928. As the lumbering, mining, and railroad industries made their way into the western states during the latter part of the 19th century they carried with them large populations into areas with very little provision for care of the sick. The construction as well as maintenance of hospitals was financed by contributions from all employees through mutual benefit associations. Typical of the single-hospital plan is that of Baylor University Hospital which in 1929 contracted with 2,000 Dallas, Texas, school teachers to provide hospital care at the annual rate of \$6 per person.

When it became apparent that single-hospital plans could not extend their facilities to large segments of the public, non-profit plans embracing many hospitals were organized. The modern Blue Cross plans began in 1937 with the endorsement of the American Hospital Association and the organization of the Hospital Service Plan Commission which coördinates the Blue Cross plans of different communities and spark-plugs research and experimentation in group hospital care.

As recently as 1926 the American

Medical Association branded group hospitalization as "unethical," "not economically sound," and an effort to "profiteer by vending hospital services." The attitude of the medical profession has been progressively more favorable, however, and in 1942 hospital service insurance was formally endorsed by the American Medical Association.

DEAN ROBERTS

**Our American Babies**—By Dorothy V. Whipple, M.D. Boston: M. Barrows & Co., 1944. 367 pp. Price, \$2.50.

This is a delightful and instructive book with many helpful charts and illustrations. It should be exceedingly useful to inexperienced parents because of the author's ability to illustrate by anecdote the principles of baby care. Problems previously unfamiliar to them are presented so vividly that many will be spared the pain of learning through their own errors—if they read this inspirational and educational book.

Although the age period covered is limited to children under 2 years, the fundamentals of child management are so clearly stated that the book will be of interest also to parents of older children and to other persons working with children of more than 2 years. Moreover, the closing chapters on illnesses and accidents make a good practical handbook for any parent.

As this book was completed in November, 1943, it is not surprising to find comments regarding "A Victory Baby." These comments are still of value because they emphasize fundamentals of good baby care. The chapter on "Cost of Having a Baby" may already be out-of-date.

The particular value of this book for parents lies in Dr. Whipple's belief in the baby's "cosmic assignment"—his need to "unfold" under parents' watchful care. As Dr. C. Anderson Aldrich has said in the Introduction, "It

breathes an attitude of respect and tolerance for the development of children which is based on scientific research as well as sentiment." This book is highly recommended for young or inexperienced parents.

MARTHA L. CLIFFORD

**Professional Nurses**—U. S. Department of Labor, Women's Bureau, Bulletin 203, No. 3. Washington: U. S. Govt. Ptg. Office, 1946. 66 pp. Price, \$.15.

This forecast of post-war employment opportunities for professional nurses, based on a very carefully documented, statistical review of the nursing situation during the last five years, is of importance to all those planning recruitment programs, expanding educational facilities, or attempting to select a subject for specialized study. Counselors and educational directors, to say nothing of writers and speakers, wishing to secure data on the supply and distribution of professional nurses, will find all of the material useful.

The sections (pages 19-21) "Opportunities for Women with Special Employment Problems," and the outlook for employment in the major fields (pp. 28-46) are of interest to all nurses. The estimated need for public health nurses is 69,000 to serve a population of 138 million (p. 33).

DOROTHY DEMING

**Ethics for Modern Nurses**—By Katharine J. Densford, M.A., R.N., and Millard S. Everett, Ph.D. Philadelphia: Saunders, 1946. 260 pp. Price, \$1.75.

Primarily written as a textbook for student nurses, the material in this volume is presented in two parts: Part I, Student Adjustments, and Part II, Personal, Professional and Social Ethics.

With the exception of Chapters 1 and 2, Part I will be helpful in orienting the nurse to the very different en-

vironment of the hospital and to the profession of nursing. Chapters 1 and 2 contain information that should be available to every nurse before she takes the important step of entering a school of nursing.

Part II includes an excellent discussion and summary of five philosophies of life and the moral principles involved in purposeful, satisfying, and useful living.

This book has no pat answers for specific problems but, far more important, it sets forth basic principles to enable the student to think through the many perplexing situations she will confront in her profession as well as those she will meet as a member of modern society. The last chapters of Part II are devoted to a discussion of the application of these principles to a few nursing and medical problems. At the end of each chapter there are many excellent questions for discussion and well chosen short lists of supplementary reading.

Although written as a textbook for student nurses, Part II is recommended reading for all nurses. It will reaffirm the premise that nurses have always subscribed to, namely, that they have an important rôle to play in bringing about better health and happiness for all the people.

RUTH FISHER

**Official and Tentative Methods of Analysis of the Association of Official Agricultural Chemists (6th ed.)—Washington (P. O. Box 540): Association of Official Agricultural Chemists, 1945. 932 pp. Price, \$6.25 Domestic; \$6.75 Foreign.**

The sixth edition of the "Book of Methods" is a conspicuous example of progress despite the war years, and brings up to date the standardization of analytical, chemical, and microbiological methods for the examination of agricultural and related articles of commerce. The compilation is not the selection of methods by one author, but

rather the result of a well organized program founded upon years of experience and collaborative research work to prepare methods of such accuracy that the determinations obtained thereby will be acceptable in court.

The methods deal predominately with the examination of foods and closely related materials, 93 pages being devoted to drugs and 5 to cosmetics. The procedures are designed to prevent and/or to control the sale of dangerous foods, drugs, and cosmetics, and to correct fraud and filth abuses in connection with the manufacture and sale of these items. Nutritionists are fully aware of our daily dependence upon the food producer, packer, and distributor for quality in foods. They know too of the meritorious part played by the methods of analysis to protect both the consumer's health and his purse. The proper use of these methods reveals facts which determine whether or not the foods and drugs are dangerous to use, are partially decomposed, are deceptive or inferior to the standard, or are substitutes for another article. Furthermore, these disclosures make possible the fulfillment of the requirement that foods must be labelled truthfully, giving the name of the article, or in the case of a mixture for which there is no recognized definition, a list of the ingredients therein.

In addition to the subjects for which methods have been outlined previously, the book now includes methods for the examination of certain Cosmetics; Enzymes; Gelatin, Dessert Preparations, and Mixes; Vitamin Preparations; and Extraneous Matter (Filth, Insects, Insect Parts, and Insect and Rodent Excreta) in Foods and Drugs. Among the methods for the determination of vitamins are procedures for vitamin A, thiamin hydrochloride, riboflavin, niacin, vitamin C, vitamin D, and vitamin K. The Microbiological Methods have been expanded to include procedures

for the examination of nuts and nut products, canned vegetables and canned fruits and other acid canned foods. Sanitarians and nutritionists will be particularly interested in the new chapter for the detection of filth and extraneous matter applicable to canned citrus juices; tea; leafy crude drugs, and condiments; cocoa, imitation cocoa, and cocoa substitutes; cheese; dried milk; cream; evaporated and condensed milk; butter; shelled nuts; peanut butter; baked goods; prepared cereals; flour and meals; alimentary pastes; eggs and egg products; apple butter; fresh, frozen, and canned fruits; candy and sugar products; tomato and other vegetable materials, canned, frozen or dried; pickles and relishes; mayonnaise and salad dressings; manure fragments in dairy products; and urine stains (chiefly of rodent origin) on textile food containers.

A. H. ROBERTSON

**A Malariologist in Many Lands—**  
*By Marshall A. Barber. Lawrence, Kans.: University of Kansas Press, 1946. 158 pp. Price, \$2.50.*

Should one attempt selling medical entomology to a group of freshmen college students, here is perhaps the best inducement that could be offered. Concentrated in this volume is the history of a medical entomologist than whom few can claim fuller lives.

Much more than a sales talk for medical entomology is presented. It is more than an autobiography. Dr. Barber, in his foreword to the book, states, "This book aims to give, in simple form, some account of my anti-malarial work in various parts of the world. . . . I have included here only such details as may help to clarify the main topic—malaria, its prevalence and prevention, in various parts of the world."

This is not a textbook. It does not attempt mosquito classification or explanation of malaria control methods.

Rather, it covers highlights of medical and entomological aspects of the malaria problems in various parts of the world—from the United States to Malaya, Greek Macedonia and Brazil, with frequent stopping places in between—and indications of the general control program.

For the experienced malariologist this should prove enjoyable reading recalling various important facts of malaria control. To the layman in malaria control it should serve as general introduction to the study of malariology or a background of information concerning the basic factors involved in malaria control.

FRANCIS B. ELDER

**Living in Our Communities—**  
**Civics for Young Citizens—***By Edward Krug and I. James Quillen. New York: Scott, Foresman and Company, 1946. 612 pp. Price, \$2.64.*

This is a textbook in civics for ninth graders. At first glance it would seem to be a little remote from the interests of the public health worker. But the publisher did not go far wrong in sending the *Journal* a review copy. For one thing, it is good to know and use the fine things that are being done by our professional colleagues in other fields. This book has a wealth of suggestive material valuable for the health educator, the public health nurse, or anyone in the health department whose kit of tools must include teaching techniques.

In the second place, the two chapters on Keeping People Healthy and Maintaining Safety are acutely relevant to our own problems and, like other chapters, excellent. For example, the historical background for safe water supplies is sketched, the engineering feats that go into a great metropolitan water system, as well as its counterpart in the small community. Modern health centers, clinics, schools, hospital,

health departments, and local government are all related to the job of keeping healthy. "Keeping healthy seems at first just a personal matter—but as we get into the subject we see that family, neighborhood and community have a great deal to do with health."

Each chapter includes further reading lists; suggestions of careers in each field are discussed and the kind of training needed set forth—all in terms of the

everyday life of the average youngster. There are illustrative selections from literature, serious and not so serious, classic and modern, pictures (from Grant Wood to comic strips), maps, charts, and pictographs. If you want to see what modern education can do by way of relating life and learning, an hour or two with this textbook will delight both your mind and your eye.

MARTHA LUGINBUHL

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

ABRIDGED APPRAISAL OF TUBERCULOSIS CONTROL ACTIVITIES. Orange County, New York, 1944-1945. 36 pp.

ACETANILID: A CRITICAL BIBLIOGRAPHIC REVIEW. By Martin Gross, M.D. New Haven, Conn.: Hillhouse Press, 1946. 155 pp. Price, \$3.00.

ALCOHOLISM IS A SICKNESS. By Herbert Yahraes. New York: Public Affairs Committee, Inc., 1946. 32 pp. Price, \$1.00.

ALCOHOL SCIENCE AND SOCIETY. (Twenty-nine Lectures with Discussions as given at the Yale Summer School of Alcohol Studies.) New Haven: Quarterly Journal of Studies on Alcohol, 1945. 473 pp. Price, \$5.00.

THE AMERICAN POCKET MEDICAL DICTIONARY. Edited by W. A. Newman Dorland, A.M., M.D. Philadelphia: Saunders, 1946. 1061 pp. Price, \$2.00.

AMERICAN STANDARDS ASSOCIATION—1945-46 YEAR BOOK. New York: American Standards Association. Free from publisher.

ANIMAL LIFE IN PERCOLATING FILTERS. By T. G. Tomlinson, M.Sc., M.Inst.S.P. London: His Majesty's Stationery Office, 1946. 19 pp. Price, Ninepence net.

AN OUTLINE FOR TEACHERS. By Gladys Sellew, R.N., Ph.D. Philadelphia: Saunders, 1946. 58 pp.

AQUATIC STANDARDS FOR Y.M.C.A. CAMPS. By Thomas Kirk Xureton, Jr., and Richard H. Pohndorf. New York: Association Press, 1946. 74 pp. \$75.

CARDIAC CONDITIONS—GUIDE FOR PUBLIC HEALTH NURSES No. 4 (rev.). Department

of Educational Nursing. New York: Community Service Society, 1946. 14 pp. Price, \$1.00.

DRAINAGE FOR HEALTH IN THE CARIBBEAN AREA. By E. G. Magoon. Havana: Compania Editora de Libros y Folletos, 1945. 556 pp.

FOLKS DO GET BORN. By Marie Campbell. New York: Rinehart & Company, Inc., 1946. 245 pp. Price, \$3.00.

FOOD BUYERS INFORMATION BOOK. By Alexander Todoroff. Chicago: The Grocery Trade Publishing House, 1946. 380 pp. Price, \$4.00.

A GUIDE TO PSYCHIATRIC REFORM. By William F. Burke, Jr. New York: William-Frederick Press, 1946. 15 pp. Price, \$25.

HEALTH EDUCATION IN RURAL SCHOOLS AND COMMUNITIES. By Nina B. Lamkin. New York: Barnes, 1946. 209 pp. Price, \$2.50.

HOW TO READ STATISTICS. By R. L. C. Butsch, Ph.D. Milwaukee: Bruce Publishing Co., 1946. 184 pp. Price, \$2.50.

IN BEHALF OF THE YOUTH OF THE WORLD. Conclusions and Resolutions—Adopted by the International Labor Conference in the Twenty-Seventh Session, Paris, France, October 15 to November 5, 1945. United States Department of Labor, Children's Bureau Publication 315, 1946. 24 pp. Price, \$1.00.

INDUSTRY TUBERCULOSIS SILICOSIS AND COMPENSATION. Edited by Leroy U. Gardner. New York: National Tuberculosis Association, 1945. 126 pp. Price, \$2.00.

INTO THE FREEZER—AND OUT. By Donald K. Tressler, Ph.D., Clifford F. Evers, B.S., and

- Lucy Long. New York: Avi Publishing Co., 1946. 223 pp. Price, \$2.50.
- KATHERINE KENT. By Mary Sewall Gardner, A.M., R.N. New York: Macmillan, 1946. 298 pp. Price, \$2.75.
- LADY IN WAITING. By Rory Gallagher. (6th printing.) New York: Stephen Dye Press, 1943. 243 pp. Price, \$2.50.
- LIVING IN OUR COMMUNITIES. By Edward Krug and I. James Quillen. Chicago: Scott, Foresman, 1946. 612 pp. Price, \$2.64.
- MANSON'S TROPICAL DISEASES. Edited by Philip H. Manson-Bahr. (12th ed.) Baltimore: Williams & Wilkins, 1945. 1068 pp. Price, \$12.00.
- MANUAL FOR RED CROSS HOME NURSING COMMITTEE CHAIRMEN. Organization and Functions of the Red Cross Home Nursing Committee. Washington: American National Red Cross, 1946. 64 pp.
- A MANUAL OF TUBERCULOSIS—CLINICAL AND ADMINISTRATIVE. By E. Ashworth Underwood, M.A., B.Sc., M.D., D.P.H. (3rd ed.) Baltimore: Williams & Wilkins, 1945. 524 pp. Price, \$4.50.
- MARINE MICROBIOLOGY. By Claude E. Zobell, Ph.D. Waltham, Mass.: The Chronica Botanica Co., New York: G. E. Stechert and Co., 1946. 240 pp. Price, \$5.00.
- MATERNITY HOMES FOR UNMARRIED MOTHERS. By Maud Morlock and Hilary Campbell. Washington: U. S. Gov. Ptg. Office, 1946. 94 pp. Price, \$2.00.
- MEDICAL EDUCATION AND THE CHANGING ORDER. By Raymond B. Allen, M.D., Ph.D. New York: The Commonwealth Fund, 1946. 142 pp. Price, \$1.50.
- MICROBIOLOGY FOR NURSES. By Mary Elizabeth Morse, M.D., and Martin Frobisher, Jr., S.B., Sc.D. (7th ed.) Philadelphia: Saunders, 1946. 521 pp. 214 illus. Price, \$3.00.
- NEUROSIS AND THE MENTAL HEALTH SERVICES. By C. P. Blacker, M.A., M.D., F.R.C.P. New York: Oxford University Press, 1946. 218 pp. Price, \$5.00.
- PERSONAL HYGIENE APPLIED. By Jesse Feiring Williams, M.D., Sc.D. (8th ed.) Philadelphia: Saunders, 1946. 564 pp. 156 illus. Price, \$2.50.
- THE PREVENTION OF COMMUNICABLE DISEASES. Department of Education. Baltimore: Division of Health and Physical Education, 1946. 37 pp.
- POSTWAR VENEREAL DISEASE CONTROL. Supplement No. 20 to The Journal of Venereal Disease Information. Federal Security Agency, U. S. Public Health Service. Washington: U. S. Gov. Ptg. Office, 1945. 213 pp. Price, \$3.50.
- PUBLIC HEALTH—A CAREER WITH A FUTURE. New York: American Public Health Association, 1946. 29 pp. Price, \$1.00.
- THE PUBLIC HEALTH NURSE AND YOU. U. S. Public Health Service. Washington: U. S. Gov. Ptg. Office, 1946.
- PUBLIC HEALTH NURSING IN SYPHILIS AND GONORRHEA. By Evangeline Hall Morris. Philadelphia: Saunders, 1946. 239 pp. 18 illus. Price, \$2.25.
- QUALITATIVE ORGANIC MICROANALYSIS. By Frank Schneider, Ph.D. New York: Wiley, 1946. 218 pp. Price, \$3.50.
- SCHOOL BOARDS IN ACTION. 24th Yearbook. American Association of School Administrators. Washington: American Association of School Administrators, 1946. 413 pp. Price, \$2.00.
- SCHOOL BUS STANDARDS. 1945 (rev. ed.). Washington: National Commission on Safety Education, 1946. 54 pp. Price, \$3.00.
- SOCIOLOGY AND SOCIAL PROBLEMS IN NURSING SERVICE. By Gladys Sellev, B.S., R.N., Ph.D. (2nd ed.) Philadelphia: Saunders, 1946. 379 pp. 49 illus. Price, \$2.75.
- STUDIES ON BRAZILIAN ANOPHELES FROM NORTHEAST AND AMAZON REGIONS. By L. M. Deane, O. R. Causcy and M. P. Deane. Baltimore: The Johns Hopkins Press, 1946. 58 pp. Price, \$1.10.
- TEXTBOOK OF BACTERIOLOGY. By Edwin O. Jordan, Ph.D., and William Burrows, Ph.D. (14th ed.) Philadelphia: Saunders, 1946. 909 pp. 242 illus. Price, \$7.00.
- TOPLEY AND WILSON'S PRINCIPLES OF BACTERIOLOGY AND IMMUNITY. 2 Vols. (3rd ed. rev.) Baltimore: Williams & Wilkins, 1946. 2054 pp. Price, \$12.00.
- TUBERCULOSIS AND INDUSTRIAL EMPLOYMENT. Prepared by Oscar A. Suder, M.D. New York: National Tuberculosis Association. 1946. 15 pp. \$1.00 each for 10 or more.
- WATER TREATMENT AND PURIFICATION. (2nd ed.) By William J. Ryan. New York: McGraw-Hill, 1946. 270 pp. Price, \$7.50.
- WOMEN IN INDUSTRY. By Anna M. Baetjer, Sc.D. Philadelphia: Saunders, 1946. 344 pp. Price, \$4.00.
- YOU AND YOUR CITY. United States Conference of Mayors. 40 pp.
- YOUR HEALTH AND SAFETY. By Jesse Williams Clemensen and William Ralph Lippert. New York: Harcourt Brace, 1946. 592 pp. Price, \$2.12.

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**"White Females" and Other Interesting Statistics**—Breathes there the health man with soul so surfeited who never to himself hath exclaimed, now there's an interesting statistic! For the first time the expectation of life passed the 65 year mark (in 1944). For white females the average expectancy was 68.95 years, while for those white females who had reached their first birthday the average had increased to 71. There is a wealth of other challenging statistical comparisons for you.

ANON. Longevity of the American People in 1944. *Stat. Bull. (Met. Life Ins. Co.)* 27, 5:1 (May), 1946.

**Indolent Tuberculosis—Or Patient?**—Every health worker who lends his voice to the "early discovery—early recovery" chorus owes it to himself to read this quoted British editorial. It's about the indolent early cases that fail to recover early.

ANON. Indolent Early Tuberculosis. *Pub. Health Rep.* 61, 23:821 (June 7), 1946.

**Anti-Gunn-Platt**—From the man who made the pioneering study which engendered the National Health Council comes the opinion that complete amalgamation of all voluntary health agencies is as impractical now as it was deemed to be a quarter century ago. I wish he might have argued with less passion such questions as the blighting effect of ponderous bigness, or the meek little man's resentment against high-pressured chest drives (so appropriately named!) or the utter impracticability of preventing some upstart American Liver-and-Lights Association from seeking funds when all the established agencies had been amalgamated out of the public's sight and sympathy.

When a writer damns contrary opinion as communistic, the reader wonders whether the debator's arguments are as sound as he, the bystander, suspects they might be.

ARMSTRONG, D. B. Facts and Fallacies in the Integration of National Voluntary Agencies. *J.A.M.A.* 131, 7:587 (June 15), 1946.

**One for the Weak Side**—Statistical evidence suggests the efficacy of BCG vaccination for the first six years (among American Indians) and implies that this vaccine might be of use among other infected groups where there is little chance of isolation. Such groups might be nurses in general hospitals and sanatoria where exposure is great and protection difficult.

ARONSON, J. D. and PALMER, C. E. Experience with BCG Vaccine in the Control of Tuberculosis among North American Indians. *Pub. Health Rep.* 61, 23:801 (June 7), 1946.

**Clear and Concise**—Unless you are sure you are in possession of all that's new about what you used to call catarrhal jaundice you will profit by reading this fine description of this infectious condition caused by a virus that thumbs its nose at chlorine, alcohol, and most other germicides.

CAPPS, R. B. Infectious Hepatitis. *Am. J. Nurs.* 46, 6:383 (June), 1946.

**Epidemic Hepatitis in Whistle-Stop**—When 276 persons in a community of 2,800 souls come down with an infectious disease, you really have an epidemic. Water, milk, and food supplies were not incriminated. Seemed to be a matter of personal association between infected and susceptible.

DAVIS, D. J. and HANLON, R. C. Epidemic Infectious Hepatitis in a Small Iowa Community. *Am. J. Hyg.* 43, 3:314 (May), 1946.

**Official Report on That Demonstration**—Short-time programs of mass venereal disease testing are helpful in reducing current infections and good residual effects are evidenced by the continuing load on clinics and private practices. This is the conclusion of a health officer who tried one.

DENISON, G. A. and SMITH, W. H. Y. *Mass Venereal Disease Control in an Urban Area*. South. M. J. 39, 3:195 (Mar.), 1946.

**Pioneering Step**—How the Maryland State Board of Health carries out the plan for medical care of the medically needy will interest you. Each county has a steering committee, and most have featured bedside nursing services in the program. A study is being made of the calls for nursing care under this scheme.

FISK, H. L. *Public Health Nursing in a State Medical Care Program*. Pub. Health Nurs. 38, 6:292 (June), 1946.

**Most Widespread of All Diseases**—Oral hygiene is commonly the step-child of community health administration or a half-baked dental program is frequently undertaken by some agency outside the official family. So it would seem that health workers generally owe it to themselves to keep their minds open to the problems involved. Here is a keen mind-opener for you.

GETTING, V. A. *Fluorine and Dental Caries*. New England J. Med. 234, 23:757 (June 6), 1946.

**"In Times of Peace . . ."**—More evidence of the protective value of influenza vaccine comes trickling through the scientific press. This report is heavily technical (perhaps it only seems so because the office temperature is 90: relative humidity also 90) but from it, we human pincushions will gain some heartening news. One shot gives as good a response as three at weekly intervals.

HENLEY, W., *et al.* *Experiments on Vac-*

*cination of Human Beings against Epidemic Influenza*. J. Immunol. 53, 1:75 (May), 1946.

**They Take the Principle for Granted**—To his Canadian brethren this English medical officer tells just how Great Britain proposes to go about the provision of hospital, medical, dental, and nursing care for every man, woman, and child in the country without payment of any fee at time of need.

JAMESON, W. *Replanning Britain's Health Services*. Canad. Pub. Health J. 37, 5:173 (May), 1946.

**Parish Councils and Penny Rates**—With typical British candor clothed in quiet humor, an English M. O. H. pictures all the the moss-covered anachronisms that persist to the detriment of orderly rural public health administration. Any American writer who aspires to take up pen against our own archaic administrative hodge-podge would be helped as well as entertained by this dissertation on bow-and-arrow defenses against rocket-era health hazards.

MARSDEN, H. E. *Some Problems in Rural Public Health*. Pub. Health 59, 8:112 (May), 1946.

**Dr. Thomas's Splint**—If you ever become curious about who the Thomas was who fathered the well known splint, you'll get the information you want here. He came from a line of Welsh farmers, a family with a long history of successful "bone-setting." He did more than perfect the famous device for he did much to counteract the then over-eager amputators.

McMURRAY, T. P. *Thomas and His Splint*. Brit. M. J. 4457:872 (June 5), 1946.

**It Cost Thirteen Dollars a Head**—Apparently healthy adult industrial workers can be given the benefit of preventive health services even though they are employed in comparatively small plants. So conclude the directors



of this demonstration who tell how to get results.

MILLMAN, N., *et al.* Coöperative Plan for the Development of a Small Plant Health and Industrial Hygiene Program in New York City. *Indust. Hyg.* 15, 6:371 (June), 1946.

**Baby Boom**—Though this paper on population problems does not appear in the scientific press it is technical enough to be dignified by your notice. And it is illuminating too. Here is one sentence: "The point is worth pondering equally by persons who believe that birth rates can be promptly lowered wherever they are high merely by disseminating contraceptive knowledge, and by persons who suppose that birth rates would rebound promptly if only contraceptive knowledge and materials were withheld from the population." What the point is, you must find out for yourself.

NOTESTEIN, F. W. The Facts of Life. *Atlantic Monthly* 177, 6:75 (June), 1946.

**Development of Discoveries of Free Minds**—Wartime medical research, employing 1,500 scientists and

4,000 technicians, with a budget of 24 million dollars, centered upon a wide variety of projects. Vaccines for influenza and pneumonia, protection against malaria, fractioning of human blood, perfection of new insecticides, production of penicillin were some. These are the best known, but there were other less obvious benefits that you may want to know about.

RICHARDS, A. N. The Impact of the War on Medicine. *Science* 103, 2680:575 (May 10), 1946.

**Protein vs. Vitamin**—"In Europe particularly, the preponderance of calorie and protein deficiency and the rarity of vitamin deficiencies in the civilian populations were striking." This sentence introduces a searching discussion of present-day nutritional problems, and the following sentence ends it: "I believe that (protein) is the major problem of nutrition in clinical medicine today." Vitamin fanciers, please note.

YOUNG, J. B. Nutrition and the War. *New England J. Med.* 234, 24:273 (June 13), 1946.

# ASSOCIATION NEWS

## SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 12-14

### RAILROAD FARES FROM VARIOUS POINTS TO CLEVELAND, OHIO

*American Public Health Association  
November 12-14, 1946*

<i>From</i>	<i>One-way for Pullman Travel</i>	<i>Round Trip for Pullman Travel</i>	<i>One-way Lower Berth</i>	<i>One-way Upper Berth</i>
Atlanta, Ga.	\$24.20	\$42.70	\$6.40	\$4.85
Baltimore, Md.	14.14	27.10	3.50	2.65
Boston, Mass.	22.50	41.75	4.95	3.75
Buffalo, N. Y.	6.11	12.05	2.95	2.20
Chicago, Ill.	11.66	22.45	2.95	2.20
Dallas, Tex.	39.62	66.30	10.40	7.95
Denver, Colo.	45.83	73.70	11.30	8.60
Duluth, Minn.	26.70	45.05	6.40	4.85
Fort Worth, Tex.	39.62	66.30	10.40	7.95
Indianapolis, Ind.	9.41	18.35	2.95	2.20
Jacksonville, Fla.	35.86	62.55	9.25	7.05
Kansas City, Mo.	26.44	45.20	6.40	4.85
Louisville, Ky.	12.32	22.90	3.60	2.85
Los Angeles, Calif.	84.48	121.80	20.80	15.85
Memphis, Tenn.	24.86	43.80	6.95	5.30
Milwaukee, Wis.	14.47	26.70	3.60	2.85
Minneapolis, Minn.	25.09	42.65	5.80	4.40
Nashville, Tenn.	18.48	33.20	5.25	4.00
New Orleans, La.	36.25	62.80	9.25	7.05
New York, N. Y.	18.81	35.30	4.35	3.30
Omaha, Nebr.	28.09	47.15	6.40	4.85
Philadelphia, Pa.	15.84	30.15	3.50	2.65
Pittsburgh, Pa.	4.35	8.65	2.35	1.80
Portland, Ore.	82.43	121.80	20.80	15.85
Salt Lake City, Utah	60.93	96.40	14.75	11.25
San Francisco, Calif	84.48	121.80	20.80	15.85
Seattle, Wash.	82.43	121.80	20.80	15.85
St. Louis, Mo.	17.60	33.25	4.35	3.30
Washington, D. C.	14.14	27.10	3.50	2.65
Montreal, Que.	20.50	37.95	4.95	3.75
Halifax, N. S.	41.85	72.55	9.70	7.55
Ottawa, Ont.	18.39	34.20	4.95	3.75
Quebec, P. Q.	26.15	48.10	6.20	5.05
Toronto, Ont.	9.89	18.90	2.95	2.20
Vancouver, B. C.	82.43	121.80	21.20	16.10

NOTE: Add 15 per cent Government tax to all fares

## RATES QUOTED BY CLEVELAND HOTELS

*Seventy-Fourth Annual Meeting, November 12-14, 1946*

## AMERICAN PUBLIC HEALTH ASSOCIATION

ALL RATES QUOTED ARE FOR ROOMS WITH BATH  
ON EUROPEAN PLAN

<i>Hotel</i>	<i>No. of Rooms</i>	<i>Single</i>	<i>Double</i>
Alcazar	300	\$3.00	\$5.00
Allerton	550	2.50-3.00	3.50- 5.00
Auditorium	300	2.00-3.50	4.00- 7.00
Bolton Square	284	2.50-3.00	3.50- 6.00
Carter	600	3.00-6.00	4.50- 9.00
Cleveland	1,000	3.00-7.00	4.50-12.00
Hollenden	1,000	3.00-5.00	4.50-12.00
New Amsterdam	250	2.00-3.00	3.50- 6.00
Olmsted	250	2.00-3.50	3.50- 7.00
Statler	1,000	3.00-6.00	5.00- 8.00
Wade Park Manor	400	3.50-5.00	5.50- 9.00

.....(Cut off on this line and mail to the hotel of your choice).....

HOTEL RESERVATION BLANK FOR THE CLEVELAND MEETING  
AMERICAN PUBLIC HEALTH ASSOCIATION, NOVEMBER 12-14, 1946To .....  
(Name of Hotel)Please reserve for me ..... rooms for ..... persons  
for the A.P.H.A. Meeting.

Single room ..... Double room .....

Maximum rate per day for room \$...... Minimum rate per day for room \$.....

I expect to arrive ..... If date of arrival is changed I will notify  
you at least 24 hours in advance.

Please acknowledge this reservation.

Name .....

Street Address .....

City..... State.....

*Mail directly to the hotel of your choice*

THE COMMITTEE ON ADMINISTRATIVE PRACTICE REPORTS ON THE 1945  
EVALUATION PROJECTS

One hundred schedules were submitted for grading and inclusion in the *Health Practice Indices*. They came from twenty states, one Canadian province, and the Territory of Hawaii. Thirty per cent were from areas which had not previously submitted an *Evaluation Schedule* to the American Public Health Association since the introduction of *Health Practice Indices*. The changing emphasis, with less stress on the grading and more on the use of the evaluation method, was increasingly evident. Information received indicates that a number of states are in the process of arranging their reporting systems to secure the evaluation data currently and will make wide use of the instrument next year.

Schedules were submitted for a variety of purposes. Divisions of Local Health Service were properly responsible for the majority. Several health officers, newly appointed to an area, wanted to establish a base line from which to measure future progress. At least two schedules were directed at the promotion of permanent, county-wide units to replace war emergency departments. Several cities were evidently preparing to reorganize their health protection agencies. A number of areas were measuring progress of special projects outlined in previous schedules.

Working with the schedules created some impressions regarding current public health practice and trends, according to Dr. R. P. Kandle, Associate Field Director, which are of general interest. Diphtheria appeared to have increased. Although devices for determining the level of immunization are still quite inadequate it seems evident that much progress is still needed in

providing and maintaining a high level of protection against diphtheria. Pertussis mortality is rapidly decreasing and there would seem to be grounds for real hope that morbidity is coming under substantial control in a few areas. Milk control is making the most rapid progress of any section as judged by the schedules. Housing was, of course, reported as an urgent problem, but the public health aspects did not seem to be adequately stressed. There were, however, excellent exceptions. Accidental death is climbing the ladder among the ten commonest causes, and the need of broad, coördinated control programs with professional guidance and leadership was evident. The handicap to the health officer of not being the registrar and thereby having readily available the vital data of the community was all too evident. The provision of functional public health statistical service by the state health departments to the health units could well be strengthened.

The next edition of *Health Practice Indices* will include data submitted on the 1945 schedules as well as those for 1946.

An Institute on local health administration and the evaluation method was held at the University of North Carolina, March 4-7, 1946, similar to that held at the University of Michigan in 1945. It was attended by representatives from Florida, Georgia, Kentucky, North Carolina, South Carolina, Ohio, and West Virginia.

The Field Staff had the valuable assistance on the grading of Edith M. Boyd, Associate Secretary, Kathryn Richardson of the A.P.H.A. staff, and Erminie Cross Lacey, statistical consultant.

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

Thurmond D. Boaz, Jr., M.D., Box 97, Jonesboro, La., Director, Winn-Jackson Parish Health Unit

Horace J. Dodge, M.D., M.P.H., Kootenai County Health Unit, Coeur d'Alene, Ida., Director

Marcus H. Flinter, M.D., American Embassy, Tegucigalpa, Honduras, C. A., Director for Honduras, Inter-American Coöperative Health Service

Gerard P. Hammill, M.D., Allegheny County Institution District, Woodville, Pa., Director

George F. Mangone, M.D., 811 Palisades Ave., Union City, N. J., Health Officer

Harry M. Weaver, Ph.D., 120 Broadway, New York 5, N. Y., Asst. to Medical Director, National Foundation for Infantile Paralysis, Inc.

### *Laboratory Section*

Hollis E. Galloway, P. O. Box 464, Cross Plains, Tex., Regional Laboratory Director, Brown County Health Unit

Colonel Karl R. Lundberg, M.C., 1307 Holly St., N.W., Washington, D. C., Deputy Director, Preventive Medicine Division, War Dept.

Theotonilio Mesquita, M.D., Ave Joao Ribeiro 1491, Aracaju, Sergipe, Brazil, S. A., Bacteriologist, Departamento Nacional de Saude do Brazil

Francisco Ruiz, Calle del Estance del Aguardiente, No. 101, Cartagena, Colombia, S. A., Student, Univ. of Michigan, School of Public Health

Edna Singerman, 323 South Mansfield Ave., Los Angeles 36, Calif., Student, Univ. of California

Orlen J. Wiemann, 241 Lake St., Eau Claire, Wisc., Sanitarian, City-County Health Dept.

### *Vital Statistics Section*

Mary McClure, 1486 Neil Ave., Columbus, Ohio, Inspector, Division of Vital Statistics, State Health Dept.

### *Engineering Section*

Walter G. Atwell, Ph.D., 2323 Humboldt St., Santa Rosa, Calif., Sanitary Engineer, Sonoma County

Major James Bernard Baty, Sn.C., Office of the Surgeon General, 2D-285, The Pentagon, Washington, D. C., Chief, Sanitary Engineering Branch

Fred H. Burley, 9300 West Jefferson, Detroit 17, Mich., Engineer in charge of Sewage Treatment, Dept. of Water Supply

Robert N. Clark, C.E., M.S., Tennessee Valley Authority, Chattanooga, Tenn., Chief Public Health Engineer

Pedrito A. Francois, M.P.H., Box 543, Charlotte Amalie, St. Thomas, Virgin Islands, Public Health Engineer in Training, Univ. of Minnesota

Guy E. Griffin, M.S., American Embassy, Tegucigalpa, Honduras, C. A., Chief Engineer and Associate Chief of Party, Institute of Inter-American Affairs

Carlos da Silva Guimaraes, Rua Humberto de Campos 15, Calvador, Bahia, Brazil, S. A., Chief of Division Technic, Servico de Aguas e Esgotos

Carlos Leopoldo Philipoxsky, M.S., Rua Pres. Pernambuco 132, Belem, Para, Brazil, S. A., Chief of Survey Section, Malaria Control Section, Special Service of Public Health, State of Para

### *Industrial Hygiene Section*

John N. Gallivan, M.D., 74 Connecticut Blvd., East Hartford 8, Conn., Medical Director, United Aircraft Corp.

### *Food and Nutrition Section*

Esther M. Frendberg, 202 Avenue A, Bismarck, N. D., Nutrition Consultant, Division of Maternal and Child Health, State Health Dept.

Robert S. Goodhart, M.D., 150 Broadway, New York 7, N. Y., Scientific Director, National Vitamin Foundation, Inc.

Jeanetta J. Krugg, 6925 Ave. C, Houston 11, Tex., Sanitarian, City Health Dept.

George A. McCaleb, 2533 Sennett, Wichita 9, Kans., Food Sanitarian, City Health Dept.

Tom Douglas Spies, M.D., Nutrition Clinic, Hillman Hospital, Birmingham 3, Ala., Director

### *Maternal and Child Health Section*

Edward M. Bridge, M.D., 219 Bryant St., Buffalo, N. Y., Dept. of Pediatrics, Univ. of Buffalo

Hilda Duffy, R.N., Shabbona, Ill., Consultant Nurse for Maternity Hospitals

Hazel M. Grainger, M.D., 500 W. 11th St., New York, N. Y., Physician, City Dept. of Health

Charles Peltz, M.D., 151 Arlington Ave.,

Brocklyn, N. Y.. Child Health Physician,  
City Dept. of Health

*Public Health Education Section*

- John W. Allen, Ph G., 120 Broadway, New York 5, N. Y.. Regional Director, National Foundation for Infantile Paralysis, Inc.
- Janet K. Anderson, M.S.P.H., 17 Beverly Court, Berkeley, Calif., Health Educator, State Dept. of Public Health
- James F. Arbuckle, 199 Main St., White Plains, N. Y., Field Representative, National Foundation for Infantile Paralysis, Inc.
- Donald W. Barton, 49 Highland Ave., Highland Park, Mich., State Representative, National Foundation for Infantile Paralysis, Inc.
- Gladys Black, 103½ West Central Ave., Albuquerque, N. M., State Representative, National Foundation for Infantile Paralysis, Inc.
- Marion C. Browder, 724 Marion E. Taylor Bldg., Louisville 2, Ky., Secy., Kentucky Chapter, National Foundation for Infantile Paralysis, Inc.
- Robert A. Burcaw, M.A., 512 Atlantic Life Bldg., Richmond, Va., State Representative, National Foundation for Infantile Paralysis, Inc.
- Robert G. Crook, 711 Maple St., Atlantic, Iowa, State Representative, National Foundation for Infantile Paralysis, Inc.
- Palmer F. Daus, 105 North Main St., Lake Mills, Wis., Field Representative, National Foundation for Infantile Paralysis, Inc.
- T. Sterling Evans, 307 Security Bldg., Charleston, W. Va., State Representative, National Foundation for Infantile Paralysis, Inc.
- Owne R. Hunter, 104 Perkins St., Leesburg, Fla., Exec. Secy., Lake County Tuberculosis and Health Assn.
- Robert W. Jones, 38 Ewing Ave., West Trenton, N. J., State Representative, National Foundation for Infantile Paralysis, Inc.
- Joseph F. Kievit, 764 Nevada St., Reno, Nev., State Representative, National Foundation for Infantile Paralysis, Inc.
- Mrs. Edward Kircher, 1104 Myrtle Ave., Sanford, Fla., Exec. Secy., Seminole County Tuberculosis and Health Assn.
- Anna E. Kothe, 41 Exchange Place, S. E., Atlanta, Ga., Exec. Secy., Georgia State Chapter, National Foundation for Infantile Paralysis, Inc.
- Maxine E. Martin, P. O. Box 24, Sebring, Fla., Exec. Secy., Highlands County Tuberculosis and Health Assn.
- John V. McCarthy, A.M., 706 40th St., Des Moines, Iowa, State Representative, National Foundation for Infantile Paralysis, Inc.
- Frank E. McDonnell, 2909 2nd Ave. North, Great Falls, Mont., State Representative, National Foundation for Infantile Paralysis, Inc.
- Frances S. McDowell, Box 47, Route 5, Jackson, Miss., State Representative, National Foundation for Infantile Paralysis, Inc.
- Harold C. Mickey, Duke Hospital, Box 3020, Durham, N. C., Superintendent
- Sarah Morrison, M.A., Box 264, Hudson Falls, N. Y., Exec. Secy., Washington County Tuberculosis and Health Assn.
- George H. Nee, Jr., 10 Post Office Square, Room 1013, Boston 9, Mass., State Representative, National Foundation for Infantile Paralysis, Inc.
- Kent H. Powers, 740 McKnight Bldg., Minneapolis 1, Minn., State Representative, National Foundation for Infantile Paralysis, Inc.
- John F. Putney, 611 Olive St., St. Louis, Mo., State Representative, National Foundation for Infantile Paralysis, Inc.
- Philip S. Randolph, P. O. Box 390, Chapel Hill, N. C., State Representative, National Foundation for Infantile Paralysis, Inc.
- William F. Robinson, 620 Midland Bldg., Denver 2, Colo., State Representative, National Foundation for Infantile Paralysis, Inc.
- Edna E. Rowell, R.N., 315 Bonita Ave., Panama City, Fla., Exec. Secy., Bay County Tuberculosis and Health Assn.
- Lee F. Schmid, 11 North Pearl St., Room 712, Albany 7, N. Y., Eastern New York State Representative, National Foundation for Infantile Paralysis, Inc.
- Stanley C. Shaw, 315 North Geneva St., Ithaca, N. Y., Western New York State Representative, National Foundation for Infantile Paralysis, Inc.
- William J. Stone, 643 South Grant, Casper, Wyo., State Representative, National Foundation for Infantile Paralysis, Inc.
- Donald V. Taverner, 189 Main St., Thomaston, Me., State Representative, National Foundation for Infantile Paralysis, Inc.
- James P. Todd, 1 Endlich Ave., Reading, Pa., Venereal Disease Control, State Health Dept.
- Allie Belle Trent, 415 Midwest Bldg., Oklahoma City 2, Okla., State Representative, National Foundation for Infantile Paralysis, Inc.
- Sam J. Watkins, 607 Boyle Bldg., Little Rock, Ark., Exec. Director, State Chapter,

National Foundation for Infantile Paralysis, Inc.

Louis V. Watwood, P. O. Box 390, Chapel Hill, N. C., State Representative, National Foundation for Infantile Paralysis, Inc.

Kathleen F. Young, M.A., 4160 John R. St., Detroit 1, Mich., Director, School of Nursing, Grace Hospital

#### *Public Health Nursing Section*

Jeanne Byers, R.N., House 101, Power, W. Va., County Public Health Nurse

Jessie P. Halbert, 69 East Main St., Meriden, Conn., Exec. Director, Meriden Public Health and Visiting Nurse Assn.

Mrs. O. M. Heiberg, R.N., 222 Lake St., Worthington, Minn., Director, Rural Senior Cadet Nurses Program

Earline Rau, Farm Labor Supply Center, Robstown, Tex., Community Nurse, Texas Farm Laborers Health Assn.

Marian E. Scholfield, R.N., Box 551, Cobalt, Ontario, Canada, Nurse in Charge, Victorian Order of Nurses

Florence N. Udell, 3 Sussex Place, London W 2, England, Chief Nurse, European Regional Office, UNRRA

Helen S. Whitford, Robert Koch Hospital, Koch, Mo., Superintendent of Nurses

#### *Epidemiology Section*

James K. L. Choy, M.D., 1008 Kansas Ave., Topeka, Kans., Director, Venereal Disease Control, City Board of Health

Anthony Donovan, M.D., Plaza San Martin 117-205, Lima, Peru, S. A., Surgeon, U. S. Public Health Service, and Traveling Representative, Pan American Sanitary Bureau

Robert E. L. Nesbitt, 1207 Gartland Ave., Nashville, Tenn., Medical Asst., Williamson County Tuberculosis Study

#### *School Health Section*

Dortha Berryman, R.N., P. O. Box 17, Cheyney, Pa., Staff Nurse, Sunnycrest Farm for Negro Boys

Thomas B. Godfrey, M.S., 233 East Magnolia, Louisville, Ky., Supervisor of Health and Physical Education, Louisville Public Schools

Edward B. Johns, Ed.D., 2506 Berkeley Terrace, Fresno, Calif., Health Education Consultant, California Community Health Education Project, Fresno State College

Julian S. Martin, Winnsboro, S. C., State Representative, National Foundation for Infantile Paralysis, Inc.

Bruno Tyson, M.D., 295 East 10th St., New York 9, N. Y., School Physician, City Dept. of Health

#### *Dental Health Section*

Raymond S. Martin, Jr., D.D.S., 1930 Chestnut St., Philadelphia, Pa., Dental Clinician, Darby Borough School District

#### *Unaffiliated*

E. Clinton Belknap, 2019 Harwood, Lincoln 8, Nebr., State Representative, National Foundation for Infantile Paralysis, Inc.

Robert F. Campbell, 1137 E. Jersey St., Elizabeth, N. J., State Representative, National Foundation for Infantile Paralysis, Inc.

Lois A. Dunn, R.N., 5101 39th Ave., Apt. F-24, Long Island City 4, N. Y., Instructor-Supervisor, School of Nursing, Cornell Univ., New York Hospital

Eugene W. Hall, 608 Park Bldg., Portland, Ore., State Representative, National Foundation for Infantile Paralysis, Inc.

Carl R. Jensen, M.A., Montezuma, N. M., District Sanitarian, State Dept. of Public Health

Warden M. Martin, M.A., Interlochen Drive, Lakeland, Fla., State Representative, National Foundation for Infantile Paralysis, Inc.

Fern A. Mosle, Box 240, Rt. 1, Santa Paula, Calif., Interested citizen

William H. Pemberton, Central Bldg., Seattle 4, Wash., State Representative, National Foundation for Infantile Paralysis, Inc.

Manuel Pomar, Marian County Health Unit, Ocala, Fla., Entomological Inspector, U. S. Public Health Service

I. Herbert Scheffer, M.D., 214 W. 91st St., New York 24, N. Y., Medical Supt., Metropolitan Hospital, Welfare Island

Joseph Turner, M.D., 1 East 100th St., New York 29, N. Y., Director, Mount Sinai Hospital

#### **CLOSING DATE FOR ACCEPTING FELLOWSHIP APPLICATIONS**

September 1 will be the closing date for accepting applications for Fellowship to be considered at the 1946 Annual Meeting in November. Members who are eligible and are interested in becoming Fellows are urged to submit their applications, completely filled in and sponsored, as far in advance of this date as possible.

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in July Journal)

The Cleveland Child Health Association, a member of the Welfare Federation of Cleveland supported by the Community Fund, is seeking woman qualified to head well established prenatal instruction program. The following qualifications have been established: candidate must be registered nurse with college degree and special training in obstetrics and public health. Previous teaching experience and knowledge of sewing preferred. A rapidly expanding program offers unusual opportunities. Salary \$3,300 per year plus transportation with month's leave each August. Inquiries may be addressed to Mr. Wirth Howell, Acting Director, Cleveland Child Health Association, 1001 Huron Road, Cleveland 15, Ohio.

**Wanted:** Executive Secretary for voluntary health agency in urban New England community. Duties: program planning, community organization, fund raising. Master's degree and experience required. Salary \$3,500-\$4,000. Box S, Employment Service, APHA.

**Wanted:** Junior Sanitarian for Department of Health, Jackson, Mich., with degree in an applied science, preferably specialization in public health courses or graduation from college or university of recognized standing and at least 1 year of successful experience in sanitation and public health work, or any equivalent combination of education and experience. Salary range \$2,350-\$2,560 per year. Apply Civil Service Commission, City Hall, Jackson, Mich.

**Wanted:** Director, Bureau of Vital Statistics. Must have college degree with courses in statistics and at least 4 years' experience in vital statistics work. Preference given to M.D. or Ph.D. in statistics. Write for information to Merit System Supervisor, Florida State Board of Health and Crippled Children's Commission, 201 Professional Bldg., Gainesville, Fla.

**Epidemiologist wanted** who will also serve as director of Division of Acute

Communicable Diseases Control of Department of Public Health, Seattle, Wash. Beginning salary \$6,000 plus reimbursement for necessary travel. Apply to Emil E. Palmquist, M.D., Director of Public Health, 300 Public Safety Bldg., Seattle 4, Wash.

**Wanted:** Physician for director of Division of Maternal and Child Health Service of Department of Public Health, City of Seattle. Applicant must have had specialized training in pediatrics or public health and experience also preferred. Beginning salary \$6,000 plus reimbursement for necessary travel. Apply to Emil E. Palmquist, M.D., Director of Public Health, 300 Public Safety Bldg., Seattle 4, Wash.

**Wanted:** Public health nurses for generalized nursing program. Salary range \$210-\$240 per month. Under civil service 40 hour week, vacation and sick leave privileges. Address Director of Public Health Nursing, City of Seattle, 504 County-City Bldg., Seattle 4, Wash.

**Wanted:** Well trained, full-time health officer to direct generalized program of Chippewa Co., Mich. Population 26,000, central office Sault Ste. Marie, population 16,000. County will be combined within year with two adjoining sparsely settled counties, increasing total population to 40,000. Beginning salary \$6,000 plus adequate travel allowance. Salary increase at time of merger. Write Russell E. Pleune, M.D., Director, Northern Peninsula Office, Mich. Dept. of Health, Escanaba, Mich.

Resort areas of Michigan need qualified public health nurses to help develop expanding programs of local health departments. Personnel policies written to offer staff members opportunities to enjoy water and woodland sports and outdoor life year round. Positions open immediately for 10 staff nurses at salary range of \$2,109-\$2,220, 2 senior nurses at \$2,460 to \$2,700 and 2 supervising nurses at \$2,700 to \$3,000. Write for personnel forms to Director, Northern Peninsula Office,



Michigan Dept. of Health, Escanaba, Mich.

**Wanted:** Public Health Nurse, age 22 to 45, salary \$200 per month and maintenance. Must furnish own car. Ideal working and living conditions. Contact Dr. Paul D. Crimm, Boehne Tuberculosis Hospital, Evansville 12, Ind.

**Wanted:** Physician to act as health officer in large local department of health in State of Washington. Salary range \$5,280 to \$6,300, entrance varying with education and experience of candidate. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Wash.

**Wanted:** Experienced sanitarians with college degree to serve in local health departments. Salary range \$2,400 to \$2,880 entrance, varying with education and experience of candidate. Opportunities of advancement to Senior Sanitarian with salary range \$2,760 to \$3,360. For full details write Dr. Arthur L. Ringle, State Director of Health, Smith Tower, Seattle, Wash.

Hawaii Board of Health wants 1 psychiatrist to direct bureau of mental hygiene. Salary \$645 to \$728.33 plus \$45.00 bonus. Certification by the American Board of Psychiatry and Neurology or sufficient training and experience to be eligible for such certification required; 1 Pathologist to direct Bureau of Laboratories. Salary \$645 to \$728.33 plus \$45 bonus. Must have 3 years' experience in pathology of which 2 years shall include administrative responsibility for work of recognized laboratory engaged in diagnosis and control of human diseases, graduation from medical school of recognized standing and 2 years' specialized training in pathology; 1 Pediatrician to assist in direction of programs of maternal and child health and of crippled children. Salary \$520 to \$620 plus \$45 bonus. Must be certified by American Board of Pediatrics or have sufficient training and experience to be eligible for such certification. Write to Board of Health, Territory of Hawaii, P. O. Box 3378, Honolulu 1, T. H. Use 15¢ Clipper Mail.

Territorial Department of Health, Juneau, Alaska, wants public health staff nurses. Minimum salary \$245 Southeastern, \$281.75 Interior. Minimum qualifications: year of public health in school of nursing approved by NOPHN and 2 years' experience, one of which has been under qualified supervision, preferably in VNA or rural public health. Vacation 1 month, 14 days sick leave, 38 hour week.

Apply directly to Director, Division of Public Health Nursing, Box 1931, Juneau, Alaska.

**Wanted:** Graduate in chemistry, chemical engineering or sanitary chemistry with experience in sewage treatment plant laboratory or similar field for position as chemist. Some experience or training in bacteriological work also desirable. Starting salary \$3,200. Newly organized research project, Eastern U. S. Apply Box R, Employment Service, APHA.

**Wanted:** Physicians for health officer positions in county and district health departments in Oklahoma. Salary range according to public health training and experience \$4,800 to \$6,600 plus travel. Beginning salary with no previous training or experience \$4,200 to \$4,800 plus travel. Address Commissioner of Health, Oklahoma State Dept. of Health, Oklahoma City 5, Okla.

**Health Directors.** Two qualified physicians to direct public health programs of counties cooperating with W. K. Kellogg Foundation in Southwestern Michigan. These counties are part of a field training area of Michigan Department of Health. Maximum salary \$7,200 plus travel allowance. Write M. R. Kinde, M.D., Director, Division of Public Health, W. K. Kellogg Foundation, Battle Creek, Mich.

**Public Health Engineers.** Two public health engineers to direct environmental health programs in counties cooperating with W. K. Kellogg Foundation in Southwestern Michigan. These counties are part of a field training area of Michigan Department of Health. Maximum salary \$3,600 plus travel allowance. Write M. R. Kinde, M.D., Director, Division of Public Health, W. K. Kellogg Foundation, Battle Creek, Mich.

**Wanted:** Physicians trained in school of public health and with public health experience for key positions in Latin-American Republics. For particulars communicate with Personnel Director, Office of Inter-American Affairs, 499 Pennsylvania Ave., N.W., Washington 25, D. C., sending brief outline of qualifications.

**Wisconsin Needs District Health Officers.** Salary \$4,320-\$4,920 and travel expenses. Write State Board of Health, Madison-2, Wis., giving training, age and experience.

**Wanted:** Two public health nurses for county health unit in attractive resort area. Population 61,000 with two urban areas of 15,000 and 8,000. Generalized

public health nursing service with staff and 7 field nurses. Salary range \$2,100 to \$2,600 annually depending upon experience and education. Own car essential with travel allowance of 5¢ per mile up to \$600 per year. Apply Director Ottawa Co. Health Dept., Grand Haven, Mich.

**Wanted:** Full-time public health nurses. Applicant should state age, year of graduation, school and any training she has had. Apply Fresno Co. Health Dept., Room 203, Courthouse, Fresno, Calif., for further information.

**Wanted:** Medical Director or Associate for national voluntary health agency. Physician with public health experience sought for agency affiliated with National Health Council. Qualifications include administration, planning, speaking and interpretation, ability to gain greater cooperation from medical schools, hospitals, public health agencies; willingness to travel; 35 to 60 years of age. Salary commensurate with past experience and demonstrated abilities. Send photograph and full outline of medical education, experience, family status, salary requirements, to Box I, Employment Service, APHA.

**Wanted:** Public health nurse with special training in health education at a salary of approximately \$3,100; also public health nurse for cancer program at salary of \$3,300. Must have degree; be able to speak in public; must own car—gasoline and oil furnished. Eastern U. S. Apply Box T, A.P.H.A.

**Wanted:** Health Officers for Florida: Younger men preferred. Liberal travel allowances in addition to salary as given below. State has liberal retirement plan. Bay County, Panama City county seat. Fast growing community on St. Andrews Bay and Gulf Coast. Salary \$6,000.

Charlotte-DeSoto-Sarasota Counties (one unit). Main office, Sarasota. Lower Gulf Coast, tourist, citrus, farming and fishing industries. Salary \$6,000. Gadsden-Calhoun-Liberty Counties (one unit). Main office, Quincy. Progressive community, thirty miles from state capital, near Gulf Coast region. Population largely rural. Salary \$6,000. Holmes-Okaloosa-Walton Counties (one unit). Main office, DeFuniak Springs. Region borders on Gulf Coast in western part of State. Population largely engaged in farming, fishing, and timber industries. Salary \$6,000. Leon County, Tallahassee, state capital, county seat. Governmental center in progressive agricultural area. Salary \$6,000. Levy and Citrus Counties (one unit). Main office, Bronson. Gulf coastal region, Central Florida, rural area, farming, fishing, lumber and naval stores leading occupations. Salary \$5,700. For application form, and further information, communicate with Merit System Supervisor, 201 Professional Building, Gainesville, Fla.

**Wanted:** Public health nurses for Columbia and Hamilton Counties of Florida. These two health units are along the banks of the Suwannee River and are interesting places to work. Starting salary \$160 per month with experience, \$170 for those with training, and \$180 for trained nurses. Mileage at 7½ cents per mile. Must own car. Write to Health Officer, Northern Florida Health District, Lake City, Fla.

**Wanted:** Public health nurses in new county health department in center of Florida's citrus region. Salary dependent upon qualifications and experience. Supervisor of Nurses, \$230 to \$270 per month. Staff Nurses, \$170 to \$200 per month, plus liberal travel allowance. Apply, Director, Polk County Health Department, P. O. Box 819, Bartow, Fla.

## POSITIONS WANTED

Physician, public health and administrative experience, considerable experience as medical examiner, seeks part-time position with city or state health department or industrial concern as preemployment examiner and health supervisor, New Orleans area. A-518

Dentist, 30 years in practice, 13 years in public health work. Several years' executive experience. Now chief of large dental department in southern state hospital. Desires position in southwestern state tubercular or mental hospital, or in

other public health dental institution. Available after November 30. Write M-465, Employment Service, APHA.

Senior Bacteriologist, Ph.D., well known teacher and investigator with industrial experience, seeks position in university, hospital, consulting or manufacturing organization. L-462

D.D.S., Veteran, 11 years' practical experience. M.P.H. expected 1946. Will accept administrative position in public health administration. M-464

### Advertisement

## Opportunities Available

WANTED—(a) Director of medical and health service, national organization; duties consist of administering and planning medical service of eastern area; physician with administrative experience in public health required. (b) Municipal health director; town of 60,000; must be competent administrator; South. (c) Public health physician to direct medical and surgical service of generalized health program caring for large industrial group. (d) Director of student health; college for young men having enrollment of 800; town of 100,000; East; \$5,000 plus apartment on campus for nine-months' college year. (e) Dermatologist to become associated with metropolitan department of health as venereal disease clinician; Middle West. (f) Young woman physician to direct student health department of young women's college, approximately 1,100 students; South. **PH8-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health educator; municipal department of health; preferably someone experienced with community councils; West Coast. (b) Bacteriologist for appointment with chemical and bacteriological laboratory operated for the control of municipal water supply; duties include research on both chemical and bacteriological problems of water supply; Middle West. (c) Sanitary engineer to join division of engineering and sanitation of county department of health, headquarters in large metropolis; Middle West. (d) Health educator or social worker to take charge of family relations department; department of health of large city in the Southwest; would work closely with the school board; immediately. (e) Health

educator; tuberculosis association and city health department; East. (f) Bacteriologist-sciologist for position of chief of bureau of laboratories; must be well qualified in public health laboratory work; \$3,000. **PH8-2** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Public health nurse to combine duties with those of school nurse; small town in Wisconsin. (b) Supervisors of staff nurses for generalized program; opportunities, also, for nurses interested in being trained in public health nursing; scholarship available; South. (c) Instructor in community health nursing; state college of nursing; newly created position; must be capable of organizing and developing comprehensive program; \$3,000, traveling expenses; East. (d) Two public health nurses; county of forty thousand, lively growing community; excellent co-operation from schools and other local organization; \$200; Middle West. (e) Student health nurse; young woman's college located in university center; college training required; position carries faculty status; opportunities for continuing studies; Middle West. (f) Supervisors for venereal disease and tuberculosis divisions of public health department; although basic salary is \$2,640, entrance salary depends upon qualifications and experience. (g) School nurse to supervise health among public schools, town of 15,000, Colorado. (h) School nurse; public health training or experience required; duties include supervising group of teachers, town of 10,000, Rocky Mountain area. **PH8-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

### Advertisement

## Opportunities Wanted

Public health physician; degrees of Doctor of Medicine and Master of Public Health from Middle Western University; has been in full-time health department work since 1939 where his duties have been principally in administrative capacity; age 44; will go anywhere; for further information, please write Burneice Larson, Director, The Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist; A.B., M.A., Ph.D. degrees; several years' successful teaching and research experience in general, dairy and food bacteriology; past several years, director, bacteriological department, metropolitan department of public health; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nurse is available for position as director or consultant; B.S. degree in public health nursing; past seven years, educational director and supervisor municipal department of health; experience in public health nursing has been broad and has included teaching all types of classes; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitarian; B.S., Civil Engineering; M.S., Sanitary Engineering; experience consists of six years as chief operator and bacteriologist of water treatment plant; four years as sanitary engineer for water treatment and sewage treatment plants; recently discharged from military service; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; B.S., M.S. and Ph.D. degrees; several years, instructor in biology, bacteriology and health; state university; three years, public health educator, city and county health department; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Dentist who has been successful in private practice for 12 years is available for position in public health or industry; for five years served as member of state board of dental examiners; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### THE INTERNATIONAL HEALTH CONFERENCE FOR A WORLD HEALTH ORGANIZATION

Plans for the World Health Organization have already been described in the April (p. 426), May (p. 576), and July (p. 825) *Journals*.

The first Plenary Session of the International Health Conference was expected to complete its meetings in New York late in July, after having adopted a constitution for submission to the member nations, and provided for an Interim Health Commission until the World Health Convention comes into force and the World Health Organization is established. It was said to be the largest and most representative international health conference ever held.

The Interim Health Commission will have an Executive Board and a Secretariat, and will serve until the first session of the World Health Assembly. It will formulate recommendations concerning integration in the World Health Organization of the activities of the League of Nations Health Organization, Office International d'Hygiene Publique, and UNRRA and will prepare material for the World Health Assembly.

The Conference had a Committee on Relationship with the United Nations and other Organizations. This committee discussed temporary machinery by which League of Nations health activities could be transferred to the new organization. The draft of the Preparatory Commission recommended by resolution that such machinery be set up to deal with urgent health problems which do not fall within the scope of any existing intergovernmental organization and to avoid duplication of functions. It also recommended the absorption of the Office International d'Hygiene Publique.

This same Committee on Relationship heard Dr. G. Foard McGinness of the International League of Red Cross Societies, Dr. Flores Zorrilla of the International Labor Office, and Mr. Weld of the Provisional International Civil Aviation Organization. Each of these urged the necessity for the closest liaison between the World Health Organization and their agencies. Dr. Flores Zorrilla declared "we have to solve all problems together and the ILO has the experience of the past in helping to solve these problems."

The draft Constitution provides that the World Organization will furnish emergency medical facilities to member nations, operate an epidemiological and statistical service for spreading medical information, and assist states in developing a strong public health service and an informed public opinion on health matters.

The Constitution defines as a function of the World Organization "to foster such mental health activities as are necessary to improve and harmonize human relations." This is said to be the first instance in which an international health body will promote psychiatry. It represents an attempt to prevent a new world war by dealing with some of the human tensions that create war.

The Constitution as proposed provides for regional committees to meet the needs of any particular region and to serve as the regional offices of the World organization. One of the knotty problems resolved at the Conference was the relation of existing regional health organizations such as the 45 year old Pan American Sanitary Bureau of

the 21 American republics. This Bureau presently administers the sanitation treaties among the American republics. A considerable opinion in the Americas favored autonomy, with the same kind of close coöperation with the new organization that the Bureau has now with UNRRA and the International Office of Public Hygiene. After four days of debate in the Assembly's Committee on Regional Arrangements it was agreed that the Pan American Sanitary Bureau should be integrated gradually in the new World Health Organization. This integration will require some modifications in the sanitation treaties now existing among the American republics.

Another problem dealt with by the Conference was that of membership by nations other than the 51 United Nations. Fifteen non-member nations were represented at the Conference by non-voting observers. When the *Journal* went to press the exact method by which non-member nations might become a part of the World Health Organization had not been agreed upon but there was general agreement that membership would not be limited to members of the United Nations. Nor had the seat of either the Interim Health Commission or the World Health Organization been determined, nor the date of the first world health Assembly.

The *New York Times* under the caption, "A World War Against Disease" said editorially after the opening session,

"Representatives of sixty-seven nations, fifty-one of them members of the United Nations, met yesterday in this city under U. N. auspices, in the largest international health conference ever assembled. They had ambitious aims, the most general of which was 'to contribute to the harmony of human relations.' Since physical and mental health does make for harmony, and since it cannot be brought to all the peoples of the world without some previous harmony, this objective was certainly not out of place.

"Seven general aims and nineteen functions were set forth in the preliminary report looking toward a World Health Organization. The aims boil down into the prevention, control, study and discussion of disease. The functions boil down into cooperation between Governments and among physicians, scientists and health officers; organized research, the exchange of all pertinent information; mutual assistance when needed; and the standardization of practices and products. What emerges is a kind of worldwide public health service, not superseding national and local health services, but binding them together in a global warfare against disease.

"Spain was absent from yesterday's gathering, though her people are just as much interested in fighting disease as those of more fortunate countries. With this exception the meeting reflected and developed no political rivalries. The substance of the report had already been accepted by the Social and Economic Council. No one was worrying about boundaries, for disease—and especially epidemic disease—knows no boundaries. There was a common concern lest the enemy of all humanity gain ground, a common determination to fight against that enemy.

"No doubt our descendants will think of mankind during most of its history, even including our own age of marvelous medical discoveries, as essentially a sick race. Our increasing wealth of knowledge about disease has been only haphazardly applied. Millions upon millions of human beings have suffered from ailments and disabilities that could have been prevented or cured—they still suffer. The genius of whole populations has been thwarted by a lack of energy, a dwindling of ambition, a lessening of hope due to disease. The great gap between the death rates of such countries as India and China and those of North America and Western Europe proves the point.

"The World Health Organization, when it is set up, will not need an international police force to support it. It will not require sanctions. There will probably be no objection in any country to inspectors from other countries who come with the sole purpose of improving a nation's health and saving the lives of its people. Medical science can be put to work, and if it is put to work successfully it may save more human beings than our last two great wars have killed.

"One's heart warms to this project. May it never know the politics, the international rivalries, the suspicions from which yesterday's meeting seemed so free!"

Among the Delegates and Advisers to the World Health Organization were the following Fellows and members of the American Public Health Association:

#### *Fellows*

Dr. Geraldo H. de Paula Souza, Brazil (Delegate)  
 Dr. Guillermo Lage, Cuba (Delegate)  
 Dr. John West, Liberia (Delegate)  
 Dr. Alberto P. Leon, Mexico (Delegate)  
 Sir Wilson Jameson, United Kingdom (Delegate)  
 Dr. Thomas Parran, United States (Delegate)  
 Dr. Martha M. Eliot, United States (Delegate)  
 Dr. James A. Doull, United States (Adviser)  
 Dr. Robert P. Fischelis, United States (Adviser)  
 Dr. Abel Wehman, United States (Adviser)  
 Miss Jean Henderson, United States (Special Assistant to the Chairman)  
 Dr. H. Jackson Davis, Uruguay (Technical Adviser)  
 Dr. Morrison Stayer, Germany (Representative, Allied Control Authorities)  
 Dr. G. Foard McGinnes (Representative, League of Red Cross Societies)  
 Dr. Hugh S. Cumming (Representative, Pan American Sanitary Bureau)  
 Dr. George K. Strode (Representative, Rockefeller Foundation)  
 Dr. John B. Grant (Representative, Rockefeller Foundation)  
 Miss M. Elizabeth Tennant (Representative, Rockefeller Foundation)

Dr. George Baehr (Representative, UNRRA)  
 Dr. Wilbur A. Sawyer (Representative, UNRRA)

#### *Members*

The Hon. Brook Claxton, Canada (Delegate)  
 Dr. G. B. Chisholm, Canada (Delegate)  
 Dr. A. Groulx, Canada (Adviser)  
 Dr. C. W. MacMillan, Canada (Adviser)  
 Dr. Szeming Sze, China (Delegate)  
 Dr. Pedro Nogueira, Cuba (Delegate)  
 Dr. Vicente Lago Pereda, Cuba (Delegate)  
 Dr. Luis F. Thomen, Dominican Republic (Delegate)  
 Dr. Jose Antonio Munoz, Guatemala (Delegate)  
 Dr. Ruk Leon, Haiti (Delegate)  
 Dr. Don Octavio S. Mondragon, Mexico (Delegate)  
 Dr. Miguel Bustamante, Mexico (Delegate)  
 Dr. Gustavo A. Rovirosa, Mexico (Delegate)  
 Dr. Carlos Enrique Paz Soldan, Peru (Delegate)  
 Dr. Hilario Lara, Philippine Commonwealth (Delegate)  
 Dr. Frank G. Boudreau, United States (Delegate)  
 Dr. H. VanZile Hyde, United States (Adviser)  
 Dr. George Lull, United States (Adviser)  
 Dr. Carlos M. Barberousse, Uruguay (Delegate)  
 Dr. José Pedro Saralegui, Uruguay (Delegate)  
 Dr. Alfredo Arreza Guzman, Venezuela (Delegate)  
 Dr. Hugh H. Smith (Representative, Rockefeller Foundation)

#### SAFETY ENGINEERING UNIT PROGRAM IN MICHIGAN

The Safety Engineering Program of the Division of Labor for the State of Michigan is under the guidance of Gordon C. Harrold, Ph.D., Chief Safety Engineer, and James Rook, formerly of the Chrysler Corporation, as Assistant Chief, with offices in Detroit and Lansing respectively.

The major effort of the unit is to enlist coöperatively all available aid in the servicing of small as well as large industry to give workers adequate protection. A representative advisory group met in Lansing, Mich., on June 6 and approved the primary program of fostering industrial safety throughout

the state. The committee, headed by John L. Lovett, Manager of the Michigan Manufacturers Association, and C. E. Wormuth, Manager of the Detroit Industrial Safety Council, as co-chairmen, is responsible to George W. Dean, the Commissioner of Labor. Plans for a state-wide industrial safety conference to be held in the spring of 1947 are under way. The engineering unit will also render safety engineering technical services at the request of industry and will promote coöperative arrangements with the established Bureaus of Industrial Hygiene. It is also expected that it will be possible to upgrade the factory inspection service for safety measures.

# HOPKINS ANNOUNCES NEW ONE YEAR GRADUATE COURSE IN SANITARY ENGINEERING

*Sanitary Engineering Bulletin of Johns Hopkins University* describes the sanitary engineering courses to be offered this fall at Baltimore. A change in university regulations makes it possible to offer a one year program of study leading to the degree of Master of Science in Sanitary Engineering, with an additional year for the Doctorate.

The work for the Master's degree is divided into two groups: one in sanitary engineering given in the Engineering School and one in public health given in the School of Hygiene and Public Health. The programs leading to either the Master's degree or the Doctorate equip men for professional work in one of the following fields of sanitary engineering: public health, design and construction, industrial hygiene, hydrology, and water conservation.

The *Bulletin* and further details are available from Abel Wolman, Dr. Eng., 211 Latrobe Hall, Baltimore 18, Md. Dr. Wolman is Professor of Sanitary Engineering both in the School of Engineering and the School of Hygiene and Public Health.

## LIFE INSURANCE RESEARCH FUND FELLOWSHIPS

The Life Insurance Medical Research Fund reports a new step in support of research in the field of diseases of the heart and arteries. It has awarded nine fellowships—four for postgraduate research, and five for student training.

The senior fellowships are given to graduates who have a doctor's degree in medicine or the related medical sciences. Junior fellowships are awarded to undergraduate students in medical schools who desire to take an extra year for training in scientific research. Fellowships are open to residents of the United States and Canada. Senior

fellows usually receive \$2,500 to \$3,500 a year, while junior fellows are given \$1,500 to \$2,000 a year.

At the same time announcement was made of 11 new research grants, totalling \$162,000 to ten institutions, bringing allocations for research since the Fund started operation last fall to \$621,000.

On July 1, the office of the Fund was established at the New York Academy of Medicine, 103rd Street and Fifth Avenue, New York City. Its Scientific Director, Dr. Francis R. Dieuaide, has also become Clinical Professor of Medicine at the College of Physicians and Surgeons of Columbia University.

## AMERICAN HEARING SOCIETY

On June 16, the members of the American Society for the Hard of Hearing voted to change the name of the organization to the "American Hearing Society." This change was made for the following reasons:

Emphasis is placed on *Hearing*. . . . The name is broad and implies that it is not a segregated group but a society whose membership is open to all who are interested in hearing losses or potential losses of hearing. The name is brief and lends itself to publicity purposes. It is positive and appealing.

## ARMY COMMENDATION MEDAL TO DR. BERNARD M. BLUM

Bernard M. Blum, M.D., M.P.H., is the recipient of the Army Commendation Ribbon, together with a letter of commendation from General L. R. Groves, Chief of the Manhattan Project. Dr. Blum organized and directed the Health Department for Oak Ridge, Tenn., the largest of the atomic bomb centers which grew in about a year and a half to 80,000 population. General Groves wrote. "It gives me great pleasure to commend you for your outstanding services rendered in behalf of the Atomic Bomb Project. In recognition of your exceptional achievement

... I am attaching a Certificate of Commendation . . . Your unceasing efforts and devotion to duty contributed, in no small measure, to the successful completion of the Atomic Bomb and its ultimate use against the enemy."

Dr. Blum has returned to his position as District Health Officer in charge of the Washington Heights District, New York City Department of Health, and member of the staff of the School of Public Health, Columbia University.

#### ANTIBIOTIC STUDY

Dr. R. E. Dyer, Director, National Institute of Health, U. S. Public Health Service, announces the formation of an Antibiotic Study Section. The Chairman is Dr. Hans T. Clarke, College of Physicians and Surgeons, New York. The Secretary is Dr. C. J. Van Slyke, National Institute of Health, United States Public Health Service, Bethesda 14, Md. The other members of the Study Section are:

Dr. David P. Barr, Cornell University  
 Dr. R. D. Coghill, Abbott Laboratories  
 Dr. Vincent du Vigneaud, Cornell University  
 Dr. Harry Eagle, Johns Hopkins University  
 Dr. R. P. Herwick, Food and Drug Administration  
 Dr. Colin MacLeod, New York University  
 Dr. E. K. Marshall, Jr., Johns Hopkins University  
 Dr. J. E. Moore, Johns Hopkins University  
 Dr. Henry Welch, Food and Drug Administration  
 Dr. Oskar Wintersteiner, E. R. Squibb and Sons  
 Dr. W. Barry Wood, Jr., Washington University  
 Dr. Milton V. Veldee, National Institute of Health  
 Dr. Arthur M. Walker, Veterans Administration  
 Capt. George B. Dowling, U. S. Navy  
 Dr. William Leifer, U. S. Army

The primary interest of this Section at the moment is in fostering fundamental chemical and biologic studies of antibiotics, with particular immediate reference to commercial penicillin, its presently known species G, X, F, and

K; new and modified penicillins; and impurities contained in penicillin.

The National Institute of Health is prepared to consider application for grants-in-aid from investigators interested in these fields. Applications should be made to Dr. Van Slyke, Secretary, Antibiotics Study Section, Research Grants Office, National Institute of Health.

#### KELLOGG GRANT TO WESTERN UNIVERSITY

A \$57,950 grant from the W. K. Kellogg Foundation of Grand Rapids, Mich., to Western Reserve University, for the purpose of expanding the training program for public health nurses in service and conducting special research projects in nursing education and in pediatric nursing was announced recently by President Winfred G. Leutner of the University. The grant will enable the Frances Payne Bolton School of Nursing at the university to expand its teaching staff of full-time professors and part-time lecturers.

#### RESEARCH IN MENTAL HYGIENE

The Ohio State Board of Control has made available to the State Division of Mental Hygiene \$25,000 for research in the field of mental diseases. The money will be divided among several research projects designed to investigate mental health problems from the biologic, medical, and sociological points of view. Edward J. Humphreys, M.D., Chief of the Bureau of Prevention and Education, Division of Mental Hygiene, will direct and coordinate the research work.

#### ALBERT SOILAND CREATES CANCER FOUNDATION

Dr. Albert Soiland, who founded the Los Angeles Tumor Institute, gave his entire life savings to establish the Albert Soiland Cancer Foundation. Assets will consist of nearly a million



dollars, including the California Medical Building, Los Angeles, and its \$50,000 a year income. It is planned first to endow fellowships for promising young doctors in cancer research in recognized medical schools of the country, and later it is hoped that hospital beds can be provided for cancer patients. The announcement of the new foundation was released just prior to Dr. Soiland's sailing for Norway, where he died May 14.

#### NEW BUILDING FOR FELS RESEARCH INSTITUTE

The Samuel S. Fels Fund of Philadelphia announces the erection of a new research laboratory building on the Antioch College Campus at Yellow Springs, Ohio. The new building, to cost about \$400,000 exclusive of equipment, is to house the activities of the Samuel S. Fels Research Institute, which was established by Mr. Fels in 1929 and originally financed by him. In 1936, its maintenance was taken over by the Samuel S. Fels Fund of Philadelphia. It was established that year to sponsor research, among other things, in various diseases, digestive functions, and behaviorism. To carry out the primary objective of the institute, that is a developmental study of man, his structure, function, and behavior in relation to heredity and environment, a multidisciplinary approach has been used covering medicine, genetics, physiology, nutrition, biochemistry, physical anthropology, psychology, and anatomy. In addition to laboratories for each of the fields mentioned, the new building will contain offices, library space and an experimental nursery school. The Institute is under the direction of Dr. Lester W. Sontag of Yellow Springs.

#### COMMONWEALTH FUND GRANTS

The directors of the Commonwealth Fund have voted \$381,817 to continue a rural hospital program begun in 1926.

Most of this fund will be used to improve medical services and hospital facilities in the region surrounding Rochester, N. Y. Appropriations just made for medical research and medical education total \$170,140. The largest of these is for a long-term study of growth and development by the Child Research Council at the University of Colorado. Beneficiaries in New York include the Memorial Hospital for the Treatment of Cancer and Allied Diseases, which received a grant for the continued study of certain biochemical problems associated with cancer.

#### SURVEY OF NURSING ORGANIZATIONS

Raymond Rich Associates have been appointed to direct a structural study of 6 national professional nursing organizations. Its sponsoring committee includes representatives of the American Nurses' Association, National League of Nursing Education, National Organization for Public Health Nursing, National Association of Colored Graduate Nurses, Association of Collegiate Schools of Nursing, and American Association of Industrial Nurses.

#### JOHN AND MARY MARKLE FOUNDATION

During 1945, grants totalling more than \$48,600 were made by the John and Mary Markle Foundation. Chief recipients of the grants were 62 universities, medical schools, research institutes, and schools of public health. Studies of tropical diseases, virus diseases, biochemistry, nutrition, physiology, and other subjects in the field of medical and physical sciences were the principal projects supported.

John A. Ferrell, M.D., who was Medical Director of the Foundation until his retirement on July 1, 1946, and who administered the program for 1945, has been a member of the American Public Health Association since 1911 and is a Charter Fellow. He became a Life Member in 1932.

On July 1, 1946, John M. Russell commenced his duties as Executive Director for the Foundation. Mr. Russell is a former assistant to President James B. Conant of Harvard University and served for two years during the war on the staff of General Douglas MacArthur.

#### SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION

The 23rd Annual Meeting of the South Carolina Public Health Association, held in May, was attended by about 500 persons. The following officers were elected:

- President*—Hilla Sheriff, M.D., Director, Division of Maternal and Child Health, State Board of Health  
*President-elect*—Laura Blackburn, R.N., Consultant Nurse, Division of Maternal and Child Health  
*First Vice-President*—L. A. Nimmons, M.D., Health Officer, Dillon, Marion, Marlboro and Lee Counties  
*Second Vice-President*—Charles W. Herrell, Sanitary Engineer, Pee Dee District  
*Secretary-Treasurer*—Mrs. Frank George (re-elected)  
*Representative on APHA Governing Council*—Ben F. Wyman, M.D., State Health Officer

#### STUDENTS FROM THE LATIN AMERICAN REPUBLICS

The Institute of International Education (927-15th Street, N. W., Washington, D. C.) through its Clearing House on Student Exchange has published a comprehensive list of 4,013 students from the 20 Latin American Republics enrolled in the colleges and universities of the United States during the academic year 1945-1946. Mexico and Cuba each sent more than 500 students; six of the republics sent fewer than 100 students, the smallest number, 34, coming from Paraguay. The list shows in addition where each student is enrolled, the source of scholarship or fellowship aid, and the field of study. The vast majority for whom this item was reported studied some branch of

physical science. More than 60 students were listed as studying in the field of public health, a dozen or more in sanitary engineering, and others in allied fields such as biochemistry, bacteriology, epidemiology, and biostatistics.

#### KANSAS PUBLIC HEALTH ASSOCIATION

The Annual Meeting of the Kansas Public Health Association, held June 6-7 in Wichita, had as its honor guest and one of the featured speakers "Kansas's famous pioneer health officer," S. J. Crumbine, M.D. Dr. Crumbine was for 19 years, until 1923, secretary and executive officer of the Kansas State Board of Health. Through his efforts the common drinking cup was abolished from public places by legislative act, the common roller towel was put into oblivion, and many progressive food and drug laws were initiated that served as a pattern for other states.

The Association elected the following officers:

- President*—Fred Mayes, M.D., Assistant State Health Officer and Director of Local Health Administration, Topeka  
*President-Elect*—Charles A. Hunter, Ph.D., Director of Public Health Laboratories, Topeka  
*Vice-President*—Edna Cheney, R.N., Consultant, Kansas Crippled Children's Commission, McCracken  
*Secretary*—Evelyn Ford, Records Consultant, State Board of Health, Topeka  
*Treasurer*—Margaret Metzger, R.N., Consultant Nurse, Metropolitan Life Insurance Company, Topeka  
*Executive Committee*:  
 R. A. Raymond, Executive Secretary, Kansas Crippled Children's Commission, Wichita  
 Leon Baumen, M.D., Labette County Health Officer, Parsons  
 J. E. Wolfe, M.D., City Health Officer, Wichita

#### FLORIDA STATE LABORATORIES

Recently four senior staff members have been appointed in the Florida

State Laboratories. The new director is Albert V. Hardy, M.D., Dr.P.H., who goes to Florida from the National Institute of Health of the Public Health Service. Dr. Roland B. Mitchell, Ph.D., will be Principal Bacteriologist and Assistant Director. He was previously with the A.A.F. as Major, Sn.C., and earlier with the Texas State Laboratories. Dr. Marion Hood, Ph.D., previously Assistant Prof. of Parasitology, L.S.U. Medical School, will be in charge of the Parasitology Division. Dr. Herman Chinn, Ph.D., currently Chief of the Division of Pharmacology and Biochemistry, School of Aviation Medicine, will join the staff on August 1 as Principal Chemist. In addition to the central laboratory in Jacksonville, Florida has four branch laboratories.

#### AMERICAN LEGION GIVES \$50,000 FOR HEART STUDY

The American Legion and its auxiliary gave \$50,000 on May 11 to the American Heart Association to assist in its campaign against rheumatic fever and heart disease. Each group gave \$25,000. Half of the fund will be used in obtaining reportable data on rheumatic diseases, in stimulating a case finding program among school children and on the community level, in initiating an immediate guidance program for prevention and care and in the vocational rehabilitation and training of victims. The other \$25,000 will be used for research into the relationship of bacteria to the occurrence and recurrence of rheumatic fever.

#### FIRST INTER-AMERICAN SANITARY ENGINEERING CONFERENCE

Rio de Janeiro is to be the center of attraction and activities for the First Inter-American Regional Sanitary Engineering Conference to be held under the auspices of the Institute of Inter-American Affairs and the Pan American

Sanitary Bureau June 10-14. The *Newsletter* of the Institute of Inter-American Affairs, Health and Sanitation Division, gave as part of the purpose for the Conference the following:

In the present effort in the New World to make all the cities and towns in the United States and the other Americas beautiful, clean, and prosperous, to increase by irrigation the number of fertile fields, to control disease by draining swamps, to promote industry by providing water power—in all this the sanitary engineer is certainly taking a leading part. In the development of the western hemisphere into a healthful, prosperous world the coming regional conference will be an important milestone.

The list of those planning to attend the Conference looked very much like the Fellowship list of the A.P.H.A. Among those who planned to attend were Harold B. Gotaas, President of the Institute of Inter-American Affairs, Herman Baity, Victor M. Ehlers, H. A. Whittaker, Gordon M. Fair, R. E. Tarbett, Abel Wolman, and Edward D. Hopkins.

#### INTERNATIONAL LIAISON COMMITTEE FOR SOCIAL HYGIENE

In response to requests from various health and welfare agencies in the United States and in other countries, a Liaison Committee for International Social Hygiene Agencies and Activities has been set up for service during the period of transition from war to peacetime relationships among nations.

Headquarters of the committee are at Room 1401, 1790 Broadway, New York 19, N. Y. William F. Snow, M.D., is serving as chairman, and Jean B. Pinney, as secretary-treasurer, with Bascom Johnson as special consultant.

#### MILLION DOLLARS FOR SURGICAL RESEARCH

Theodore L. Chase, M.D., a retired Philadelphia surgeon, now living in Reno, Nev., has increased his contribution of \$450,000 to Temple University

School of Medicine, Philadelphia, to \$1,000,000. The gift is to establish and endow a surgical research foundation with special emphasis on cancer.

#### CONNECTICUT BOARD FOR INEBRIATES

In accordance with legislation enacted by the 1945 General Assembly, Governor Baldwin has appointed the following persons to serve as members of the Board of Trustees of the Connecticut State Fund for Inebriates:

Selden D. Bacon, Ph.D., *Chairman*, New Haven

Hon. Edna A. F. Edgerton, *Stamford*

Arthur H. Jackson, M.D., *Waterbury*

Thomas P. Murdock, M.D., *Meriden*

Att'y Abraham S. Ullman, *New Haven*

#### AMERICAN SOCIETY FOR CANCER RESEARCH

At a recent meeting of the Association in Atlantic City, the following were chosen officers:

*President*—William U. Gardner, Ph.D., New Haven, Conn.

*Vice-President*—John J. Bittner, Ph.D., Minneapolis, Minn.

*Acting Secretary-Treasurer*—Charles W. Hooker, Ph.D., New Haven, Conn.

#### HEALTH PROGRAM FOR OHIO

At its Centennial Anniversary Meeting in May, the Ohio Medical Association pledged its active support and leadership in "a forward-looking, affirmative health program for the state." Its plan starts with the declaration that "every citizen of Ohio is entitled to an opportunity to achieve and enjoy good health," and that "attainment of this goal is possible."

Along with the more general items of the program, such as an attack on malnutrition, bad housing, smoke nuisance, development of recreation facilities, and the standard functions of health departments, such as sanitation, venereal disease, and tuberculosis control, school health service, maternal and child

health services, the program states that "Ohio's State Department of Health should be provided with sufficient funds for the employment of competent personnel and for the maintenance of adequate facilities. . . . The department is not receiving adequate appropriations from state funds."

As to rural health, the program declares, "Stronger and better financial local health departments better able to provide adequate services are needed in many rural areas."

The program favors medical care for the needy and encourages the extension of voluntary prepaid medical and hospital care plans. Its first item is for economic improvement in the state, in recognition of the relationship between living standards and general health.

#### CEREBRAL PALSY DIVISION CREATED

The National Society for Crippled Children and Adults, Inc., will create a special Cerebral Palsy Division to carry out its national program to assist persons afflicted with this condition. A director will be appointed for the division, which will project a six point plan aimed to insure the cerebral palsy health and medical care, social welfare and security, recreational, educational, and employment opportunities as well as foster and extend research in the care and prevention of the disease. The National Society for Crippled Children and Adults will establish a special fund to extend the program for the training of personnel and research.

#### HELP FOR WAR DEVASTATED LIBRARIES

The American Book Center for War Devastated Libraries has been organized for a pooling of resources and coordinated action in restocking devastated libraries with needed American publications. The Center requests the help of *Journal* readers in this work. Particularly needed are scientific and technological publications issued during the

past decade and scholarly books that are important contributions to their fields. Files of the *Journal*, especially for the war years, are in great demand.

The Book Center is sponsored by the Joint Committee on Books for Devastated Libraries made up of representatives of the American Library Association, Medical Library Association, and ten other national library groups. It cannot purchase books and periodicals but must depend on gifts—from individuals, institutions, and organizations.

*How to Ship*—All shipments should be sent PREPAID via the cheapest means of transportation to The American Book Center, c/o The Library of Congress, Washington 25, D. C. Although the Center hopes that donors will assume the costs of transportation of their materials to Washington, when this is not possible reimbursement will be made upon notification by card or letter of the amount due. *The Center cannot accept material which is sent collect.*

#### DEPARTMENT OF MEDICINE AND SURGERY, VETERANS ADMINISTRATION

The following appointments have been made in the Department of Medicine and Surgery of the Veterans Administration:

Thaddeus Marion Koppa, M.D., of Glen Ellyn, Ill.—as Assistant Chief, Tuberculosis Division, Branch Office 10, Dallas, Tex. He was formerly in private practice.

Edgar C. Harper, M.D., of Richmond, Va.—as Assistant Chief, Tuberculosis Division, Veterans Administration Branch Office 4, Richmond, Va. Dr. Harper has been Director of the Tuberculosis Field Service of the Virginia State Health Department and was an Instructor in Physical Diagnosis and Special Lecturer on Tuberculosis at the Medical College of Virginia.

Joseph N. Plumer, M.D., of Philadelphia, Pa.—as Chief, Medical Service, Veterans Administration Hospital, Tucson, Ariz. Dr. Plumer has just returned from active duty with the U. S. Army.

John K. Deegan, M.D., of Newport, R. I.—as Clinical Director, Veterans Tuberculosis Hospital at Castle Point, N. Y. He has been on active duty with the Army.

#### MODEL MEDICAL CENTERS IN CHINA

Plans have been made to establish model medical centers in China to rebuild the country's medical system. The program is sponsored by the Chinese Government with the coöperation of the American Bureau for Medical Aid to China. The first medical centers will be built in Shanghai and places to be designated in North and South China. Later units are planned for Western and Central China.

#### PERSONALS

##### Central States

WALTER L. BIERRING, M.D.,\* Iowa State Health Commissioner, Secretary-Treasurer of the Federation of State Medical Boards and Editor of its bulletin, has been appointed Professor Emeritus of the Theory and Practice of Medicine, State University of Iowa College of Medicine, Iowa City, in tribute to his many services.

DOUGLAS BOYD, M.D., has been appointed President of the Highland Park Board of Health, Ill., succeeding DONALD E. ROSSITER, M.D., who resigned, effective April 1. Dr. Rossiter had held the position since 1931, except while on military leave.

GERALD S. DOOLIN has recently been appointed to the newly-created position of Sanitary Director of the National Confectioners' Association of the United States, Inc. He will organize an "educational program, dedicated to the maintenance of highest standards of purity of product and plant cleanliness for the industry." Mr. Doolin was recently discharged from the Army, where he

served for 3½ years in the Sanitary Corps, with the rank of Captain. Earlier he had had experience in food chemistry, bacteriology and plant sanitation with Swift & Company and Fowler Laboratories of Chicago.

GEORGE J. FORTUNE, recently released from military service, has been appointed Executive Director of the Cleveland Hearing and Speech Center, Western Reserve University School of Medicine. Mr. Fortune has been Director of Pupil Personnel Services in the Garfield Heights city schools. He will succeed LOWELL C. RUCH, who has been with Garfield Heights and the Hearing and Speech Center for the last 11 years and who will take a similar post in Los Angeles.

HAROLD R. HENNESSY, M.D.,† on duty with the Headquarters Staff, American Medical Association, as Assistant Secretary of the Council on Industrial Health, has recently been notified by the War Department that Her Majesty, Wilhelmina, Queen of the Netherlands, on the recommendations of the Ministers of War and Foreign Affairs, has approved and ordered his admission to Knighthood in the Order of Orange-Nassau, degree of Officer with Swords. During the war, Dr. Hennessy served as Lt. Colonel in the Medical Corps and spent 2 years in the European Theatre. He was connected with the military government public health program and for meritorious service in connection with military operations against the common enemy was awarded the Bronze Star Medal.

RUTH FREEMAN, R.N.,\* Associate Professor of Preventive Medicine and Public Health at the University of Minnesota, has been appointed Administrator of the Red Cross Nursing Service. She will succeed VIRGINIA DUNBAR, now Dean of the Cornell University School of Nursing.

HOMER L. HIEBERT, M.D.,† of Topeka, Kan., Director of the Division of Tuberculosis Control, Kansas State Board of Health, since March 1942, resigned in March to take graduate work in radiology at Harper Hospital, Detroit.

EMILIE GLEASON SARGENT, R.N., M.S. P.H.,\* Executive Director of the Visiting Nurse Association of Detroit, Mich., received the honorary degree of Doctor of Science in Nursing from Wayne University at the annual commencement on June 13.

#### Eastern States

CLAUDE P. BROWN, M.D.,\* has been appointed Director of the Bureau of Laboratories of the Commonwealth of Pennsylvania, succeeding VERNER NISBET, M.D.,† who resigned on April 30. Dr. Brown has been Assistant Director since 1941.

ROYAL H. MCCUTCHEON, M.D., of Bethlehem, Pa., was elected President of the Pennsylvania Tuberculosis Society on April 26.

#### CHANGES IN HEALTH PERSONNEL IN NEW YORK STATE:

DAVID B. AST, D.D.S.,\* has taken a 6 month leave of absence as Chief of the Dental Bureau of the State Department of Health. He left for Europe on June 20 to aid in the relief and rehabilitation program for displaced persons. Under the direction of the American Jewish Joint Distribution Committee, the program will cover both children and adults in France, Belgium, Holland, Germany, and Austria, and is designed to assure that dental disability will not prevent self-sufficiency.

SYLVIA ZAPPIER, D.D.S., and ROBERT O'NEIL, D.D.S., have been given

\* Fell. A. P. H. A.  
\* Mem. A. P. H. A.

temporary appointments as Senior Dentists with the Dental Bureau of the State Department of Health. Dr. Zappler has been assigned to the health department trailer, which renders corrective dental service to preschool children in rural areas without private practicing dentists. Dr. O'Neil has been assigned to the Bureau's Albany office where, with SIDNEY B. FINN, D.M.D.,† he will administer the State Dental Program during the absence of the Bureau's Chief, Dr. Ast.

DALE C. STAHL, M.D., of Harrisburg, Pa., recently released from the armed services, has been named Acting Director of the Bureau of Tuberculosis Control, State Department of Health. Dr. Stahl was formerly in charge of the Department Division of Pneumonia Control.

HART E. VAN RIPER, M.D.,† of Scarsdale, N. Y., has been appointed Medical Director of the National Foundation for Infantile Paralysis. Dr. Van Riper joined the National Foundation's staff last October as Assistant to DON W. GUDAKUNST, M.D.\* On the latter's death in January, Dr. Van Riper became Acting Head of the Medical Department.

UDO J. WILE, M.D., Professor of Preventive Medicine and Public Health, University of Michigan, Ann Arbor, has been awarded the decoration, Commander of the Order of Public Health, by the French Minister of Health, for his service while in France in instituting a venereal disease program. This decoration has previously been issued to two other persons, one of whom is Sir Alexander Fleming.

CHARLES F. WILINSKY, M.D.,\* Executive Director of Beth Israel Hospital, Boston, and a member of the Executive Board of the American Public Health Association, has been ap-

pointed by Governor Tobin of Massachusetts as a member of the Public Health Council for a 6 year term succeeding CECIL K. DRINKER, M.D.

### Southern States

BERNARD D. DAITZ, M.S.P.H.,\* who has served with the Sanitary Corps for several years, most recently as Major, has become Executive Director of Medical Rehabilitation at the Veterans Administration Hospital, Oteen, N. C.

GEORGE B. DARLING, DR.P.H.,\* Vice-Chairman of the Division of Medical Science, National Research Council, Washington, D. C., has been appointed Director of Medical Affairs, a newly created position at Yale University, effective July 1. Dr. Darling will correlate the University interests represented in the Schools of Nursing and Medicine, the Department of Public Health and the Grace-New Haven Community Hospital.

GEORGE A. DENISON, M.D.,\* has been appointed Professor and Chairman of the Department of Public Health at the Medical College of Alabama in Birmingham. JOHN E. CHRIETZBERT, M.D., and GUY M. TATE, M.S., have been appointed Assistant Professors.

CLEMENT V. HIESTAND, M.D., of Campbellsville, Ky., recently completed 50 years in the practice of medicine, 25 of which were spent as Health Officer of Taylor County.

ALEXANDER G. LANGMUIR, Major, MC, AUS,\* a member of the Commission on Acute Respiratory Diseases at Fort Bragg, N. C., under the Army Epidemiological Board, has been appointed Associate Professor in the Department of Epidemiology of the Johns Hopkins School of Hygiene and Public Health.

MARK M. LUCKENS, Capt., Sn.C.,† has

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

been appointed Chief of the Medical Inspection Branch at Fort Jackson, S. C. Capt. Luckens has been recently discharged from the Regional Hospital at Fort McClellan, Ala., where he has been a patient for about 6 months.

#### CHANGES IN HEALTH PERSONNEL IN VIRGINIA:

BENJAMIN R. ALLEN, M.D.,<sup>†</sup> formerly of Suffolk, Va., recently released from the Army, has been appointed Director of the Bureau of Communicable Diseases, Virginia Department of Health, Richmond, effective April 1.

EDGAR C. HARPER, M.D.,<sup>†</sup> Richmond, Director of Tuberculosis Out-patient Service and the Crippled Children's Bureau, resigned, effective May 1, to become Assistant Chief, Tuberculosis Control Program, Fourth District, Veterans Administration.

HARRY F. WILSON, M.D.,\* has returned from service in the Army to resume his position as Director of the Division of Industrial Health, South Carolina State Board of Health. GEORGE H. ZERBST, M.D.,\* of Columbia, S. C., who has acted as Director of the Division during Dr. Wilson's absence, has been seriously ill and is on leave at the present time.

#### Foreign

E. H. HINMAN, M.D., Ph.D., M.P.H.,<sup>†</sup> who has served for the last four years with the Institute of Inter-American Affairs in El Salvador and in Mexico, has returned to the Tennessee Valley Authority Health and Safety Department as Chief of the Division of Malaria Control. He was awarded the Liceaga Medal by the Government of Mexico for his contribution to public health.

GEORGE C. BUNKER<sup>†</sup> has reopened an office in Panama, R. P., for consult-

ing practice. During the past 9½ years, he has served as Consulting Engineer to the National Ministry of Public Works and the National Institute of Sanitary Works, Caracas, Venezuela, S. A., and specialized in the development and purification of water supplies in Venezuela.

\* Fellow, A P H A  
<sup>†</sup> Member, A P H A.

#### CONFERENCES AND DATES

American Congress of Physical Medicine—24th Annual Session. Hotel Pennsylvania, New York, N. Y. September 4-7.

American Dietetic Association—28th Annual Meeting. Netherlands Plaza, Cincinnati, O. October 14-18.

American Hospital Association—48th Annual Convention and Post-war Conference. Philadelphia, Pa. Week of September 30.

American Medical Association—7th Annual Congress on Industrial Health. Copley-Plaza Hotel, Boston, Mass. September 30-October 3.

American Nurses Association, National Organization for Public Health Nursing, National League of Nursing Education—Biennial Nursing Convention. Atlantic City, N. J. September 23-26.

American Public Health Association—74th Annual Meeting. Headquarters—Public Auditorium, Cleveland, O. November 12-14.

Meetings of related organizations (November 11):

American School Health Association  
 American Social Hygiene Association  
 Association of Maternal and Child Health Directors

Association of Reserve Officers of the U. S. Public Health Service

Conference of Municipal Public Health Engineers

Conference of Professors of Preventive Medicine

Conference of State Sanitary Engineers

Conference of State and Provincial Public Health Laboratory Directors

Council of State Directors of Public Health Nursing

National Committee of Health Council Executives

Public Health Cancer Association

American Public Works Association—Public Works Congress. Fort Worth, Tex. September 22-25.



International Association of Milk Sanitarians, Inc.—Annual Meeting. Seaside Hotel, Atlantic City, N. J. October 24–26.

Iowa Public Health Association—Annual Meeting. Hotel Ft. Des Moines, Des Moines, Iowa. September 26–27.

Michigan State Medical Society—81st Annual Session. Book-Cadillac Hotel, Detroit, Mich. September 25–27.

National Association of Housing Officials. Cleveland, O. October 10–12.

National Committee for Mental Hygiene—Annual Meeting Hotel Pennsylvania, New York, N. Y. October 30–31.

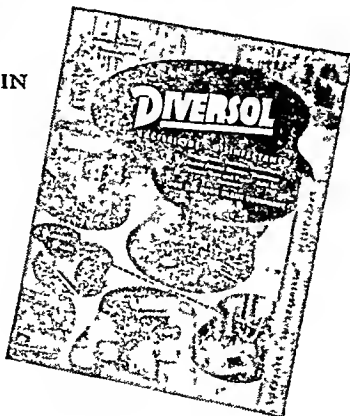


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# American Journal of Public Health and THE NATION'S HEALTH

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## Illumination Standards\*

MILES A. TINKER, PH.D.

*Professor of Psychology, University of Minnesota, Minneapolis, Minn.*

THE problem of comfortable, healthful, and efficient functioning of the eyes is of prime importance whether one is working in the school, the home, the office, or industry. Faulty illumination frequently leads to eyestrain which is often accompanied by reflex functional disturbances of other organs. Hygienic illumination is, therefore, intimately related to visual function. Since a large amount of one's visual work is ordinarily done under artificial illumination, the recommended practice of lighting for various kinds of visual work is of concern to all.

During the last decade a lighting consciousness has been forced upon most of those who perform visual tasks and upon those who control the environments in which visual work is performed. Although interest in lighting has been stimulated by popular articles, and by reports written by educators and medical men, the more fundamental information has appeared in the experimental literature. This literature is not readily available to nor easily interpreted by most people. The tendency, therefore, is to consult pamphlets on

recommended practice when lighting specifications are needed for a particular situation.

Beginning in 1915, the Illuminating Engineering Society began issuing codes on lighting. The more recent codes are known as *Recommended Practice of Home Lighting, Office Lighting, etc.* They have been prepared by the Illumination Engineering Society either alone or jointly with the American Institute of Architects usually under the rules of procedure of the American Standards Association. Although the American Psychological Association has been in existence for over 50 years, and even though applied psychologists have been interested in the field and have been making experimental contributions to the hygiene of vision for over 40 years, neither psychology nor psychologists are represented in the group specifying recommended practices. Furthermore, a large body of psychological literature has been ignored, either because the illuminating engineers were not familiar with it or because they chose not to use it. The consequence has been an emphasis upon the engineering aspects of lighting with inadequate attention to certain psychological factors. More recently there has been

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\* Special Review Article prepared at the request of the Editorial Board.

some attempt to consider more of the psychological factors. Perhaps because engineers lack a psychological background, interpretations are frequently at fault. It would seem that the most satisfactory approach to hygienic lighting might be achieved by coördinating the work of engineers, physiologists, and psychologists.

Examination of recent reports on recommended practice reveals an increased emphasis upon control of direct and reflected glare, brightness contrast, and the distribution of light. The tendency to specify relatively very intense light for many tasks is especially prominent. The purpose of this paper is to review specifications in the more recent editions of recommended practice of lighting and some of the data from which the recommendations are derived.

#### SPECTRAL QUALITY OF LIGHT

This, in general, receives adequate treatment in recommended practices.<sup>27-30</sup> It is stated that with equal foot candles of illumination, variations in color quality of light found in common illuminants have little or no effect upon the visual discrimination involved. When color is to be discriminated it should be viewed under as close an approximation of daylight as possible. Luckiesh<sup>8</sup> has a valuable discussion of light and color.

#### QUALITY OF LIGHTING

Recommendations<sup>27-30</sup> concerning control of glare, diffusion, direction, and distribution of light, light reflection value, and effects of finishes on ceilings and wall are ordinarily quite satisfactory. Visual discrimination is improved by moving the glare source from the line of vision and by reducing the brightness of the light source and the amount of light emitted by the light source toward the eye. Brightness of luminaires should be low in value. High

brightness contrasts within the field of vision should be avoided whether on the work surface or in other parts of the visual field. Proper diffusion of light helps to eliminate undesirable shadows. For this reason, purely local lighting is unsatisfactory. Since the reflection factors of objects in the visual environment play an important rôle in illumination, the finish of ceilings, walls, floors, and furnishings is important. These surfaces should provide reflecting surfaces to help spread the light about the room. Furthermore they should be such that undesirable brightness contrast does not occur within the field of vision. Shiny or glossy finishes should be avoided to prevent specular glare.

In the recommended practices, informative discussions on classification of lighting systems are usually included. Also illustrations of fixtures and installations are sometimes given. Some attention is given to daylight illumination and the need of coördinating artificial with daylight lighting.

#### INTENSITY OF ILLUMINATION

Intensity of illumination receives by far the greatest emphasis in specifications. With each revision of a lighting code prepared by illuminating engineers, the foot candle recommendations rise. One may well question whether this trend has a scientific basis, or whether the consumer has been educated to accept the higher intensities. In 1934, Luckiesh and Moss<sup>9</sup> presented general recommendations which they considered to be very conservative. These are repeated with slight changes in Luckiesh's recent book.<sup>8</sup> He adds that these are inadequate in many cases where hundreds and even thousands of foot candles are desirable. Examination of recommended practices of lighting reveals that, for the most part, they are based upon researches done and interpretations made by Luckiesh and his coworkers, or on researches inspired by

them. Let us turn first, therefore, to these reports.

In the *New Science of Seeing*, Luckiesh and Moss,<sup>9</sup> and in *Light, Vision and Seeing*, Luckiesh<sup>8</sup> make the following foot candle recommendations for common tasks of the work-world:

1. 100 foot candles or more are specified for severe and prolonged visual work. Examples include fine needle work, pen work, engraving and assembly, and discrimination of fine details involving low contrast.

2. 50 to 100 foot candles should be used for proof-reading, difficult reading, watch repairing, and average sewing.

3. 20 to 50 foot candles are listed for such visual tasks as clerical work, ordinary reading, and average sewing on light goods.

4. 10 to 20 foot candles are proposed for ordinary reading and sewing on light goods when the task is not prolonged.

5. 5 to 10 foot candles are needed for visual work which is more or less interrupted or casual.

6. 1 to 5 foot candles are sufficient for perceiving large objects.

Luckiesh<sup>8</sup> states that these are minimum foot candle recommendations and that he considers them to be very conservative from the viewpoint of ease of seeing. Furthermore these foot candles, according to Luckiesh and Moss,<sup>9</sup> are far below the intensities of illumination which new knowledge indicates to be ideal.

These recommendations are derived from various sets of data which will be discussed in turn.

*Preferences for light intensity*—Luckiesh and Moss<sup>9</sup> cite data on preferences for light intensities to support their contentions that high intensities are necessary for adequate seeing. The mean choice was about 100 foot candles but the median was 50 foot candles when up to 1,000 foot candles were available. Tinker's analysis<sup>16</sup> of light preference studies indicated that visual adaptation plays an important rôle in determining the preferences. In an experimental check, Tinker<sup>20</sup> found that when readers were adapted to 8 foot candles, the median choice for comfort-

able reading was about 12 foot candles. But when adapted to 52 foot candles, the median choice was 52 foot candles. It is obvious that the intensity of illumination to which the reader is adapted plays a dominant rôle in his illumination preference. The conclusion is, therefore, that preference for illumination intensity is not a satisfactory method for determining the intensity of light needed for efficient visual work.

*Visual acuity*—Luckiesh and Moss<sup>9</sup> and Luckiesh<sup>8</sup> list visual acuity as a basic factor in reading (and presumably in other visual work). It is true enough that visual discrimination does depend somewhat upon visual acuity. But is visual acuity an adequate criterion for prescribing appropriate lighting? Luckiesh and Moss<sup>11</sup> admit that, in many tasks the criterion of visual acuity is relatively inappropriate, i.e., in tasks involving low contrasts. But they point out that for black test objects on a white background, visual acuity improves up to 100 foot candles. As a matter of fact Lythgoe<sup>13</sup> has shown that under certain conditions of measurement, visual acuity improves up to and beyond 1,000 foot candles. Inspection of the data reveals that the knee of the curve of improvement is at about 10 foot candles and that beyond about 20 foot candles the gains are slight. It must be kept in mind that in measuring visual acuity, one is dealing with threshold values. It is highly questionable whether the almost microscopic gains in visual acuity obtained under the high foot candles justify their application to visual tasks where supra-threshold visibility is involved as in most everyday situations. Furthermore, data reveal that the visual acuity curve is practically horizontal from 50 foot candles to the higher levels.

Luckiesh and Moss<sup>9</sup> and Luckiesh<sup>8</sup> cite data on visual acuity for 1, 10, and 100 foot candles only. If they really desired to find the foot candle level

beyond which no *practical* gains in visual acuity occur, they should have investigated the range between 10 and 100 foot candles. As shown in Tinker's reviews,<sup>23, 25</sup> this criticism may be aimed at all the basic data presented by Luckiesh.<sup>8</sup> In some instances (decrease in heart rate, decrease in convergence reserve of ocular muscles), data for only 1 and 100 foot candles are presented. It appears then, that visual acuity data are of only slight use for prescribing illumination intensities for visual discrimination in supra-threshold tasks. If accepted, there is no justification for suggesting that more than 40 to 50 foot candles are necessary for adequate discrimination even for tasks that approach threshold discrimination.

*Visibility measurements* — Luckiesh<sup>8</sup> states that "After establishing a standard of visibility or desirable see-level to be attained if possible for all tasks, it is seen that specifications of light and lighting and other aids to seeing can be based upon visibility measurements." The measurements are to be made by the Luckiesh-Moss Visibility Meter. This is a device consisting of two identical circular gradients which are rotated before the eyes to alter the brightness contrast of the object whose visibility is to be measured. It, therefore, reduces the object to threshold visibility. It is the threshold which is measured. Three assumptions are made: (a) Two objects are equal in visibility when both are barely visible; (b) "Two objects are equally above threshold visibility when their visibility has been increased by the same increase" in size, brightness, brightness contrast or time; (c) "The visibility of an object, or degree of supra-threshold visibility, is proportional to the decrease in any one of the fundamental factors necessary to reduce the object to threshold visibility." These assumptions are considered to be *axiomatic* and arguments against them

are considered to be *futile*. Nevertheless, since recommended standards are based upon visibility measurements to a large degree, it seems desirable to examine the matter further. Things are not axiomatic just because someone says they are.

Since visibility measurements are in terms of threshold values, they are analogous to visual acuity measurements. They are subject, therefore, to the same criticisms as visual acuity measurements as criteria for prescribing illumination standards.

Luckiesh<sup>8</sup> emphasizes foot candles for equal visibility in prescribing illumination intensities. For example, to make newspaper text matter equivalent in visibility to 8 point book type on white paper under 10 foot candles of light, it is necessary to use 30 foot candles. And to make the 1/64 divisions on a steel scale equal to this visibility level, 180 foot candles are needed. Are these levels of illumination intensity required for efficient and comfortable seeing? Luckiesh<sup>8</sup> assumes that this is a conservative standard. On his empirical scale, the 8 point type with 10 foot candles has 48 per cent maximum visibility. (Maximum visibility is obtained from a test-object whose critical detail has a visual size of 20 minutes; a critical detail of 1 minute is the smallest visible by persons with normal vision under 10 foot candles of light.) But no adequate experimental check is made of performance of these tasks under various levels of illumination. Tinker<sup>21</sup> found that the critical illumination level (the intensity beyond which no further change in reading performance occurs as the intensity is increased) for reading 7 point newspaper type to be approximately 7 foot candles. It is difficult to conceive the need of going above 20 foot candles to provide a margin of safety above the critical level. It is highly probable that an experimental

check will reveal that other visual tasks, like discriminating the divisions on a steel scale, do not require the 180 foot candles indicated for efficient vision by the *computations* of Luckiesh. Related to this is the question of comfortable vision. Harrison,<sup>6</sup> in discussing the difficulty of using high intensities because of the introduction of glare factors states "Visibility and comfort are two separate factors which do not always overlap completely."

No one will deny that visibility is an important factor in ease of seeing. But to prescribe standards in terms of scores derived from measurements made with the Visibility Meter is open to serious question. The basic data are threshold scores. While the derived scores may appear logical, supra-threshold seeing is not the same situation as threshold seeing. Apparently, as illumination intensity is increased, one soon reaches a level of diminishing returns where further increase is of no practical importance or may introduce harmful factors from the viewpoint of easy and comfortable seeing.

*Nervous muscular tension*—Luckiesh and Moss<sup>9,10</sup> place great stress upon the apparent decrease in nervous muscular tension during reading as the illumination intensity is increased from 1 to 10 to 100 foot candles. Tinker's<sup>16</sup> analysis of their data reveals that the method employed to present their results magnifies minute differences so that they appear large. Interpolation shows only gradual changes from 10 to 20 to 25 foot candles and very slight changes from there on to 100 foot candles. The conclusion that high foot candles are needed for ordinary reading is not valid. In a comparable situation, Tinker<sup>19</sup> found that for reading 10 point type, the critical intensity was about 3 foot candles. Below this level rate of reading was retarded and fatigue increased, but for higher intensities there was no change. For people with

normal vision, 10 to 15 foot candles should provide a satisfactory margin of safety for reading legible print.

*Frequency of blinking*—Another favorite criterion employed by Luckiesh and Moss<sup>9,10</sup> and Luckiesh<sup>8</sup> as a basis for prescribing illumination intensities for visual work is frequency of blinking. The typical experiment is to measure the rate of involuntary blinking for the first and for the last five minutes for an hour's reading under 1, under 10, and under 100 foot candles of light. They note that the blink rate is greater under the 1 than under 10, and greater under 10 than under 100 foot candles. Therefore it is concluded that relatively high intensities are desirable for reading. Even if these data are accepted as valid, we do not know where between 10 and 100 foot candles the curve of increased efficiency flattens out since intermediate intensity values were not studied. But there are several sources of information which suggest that blink rate is not a valid criterion of ease of seeing: (a) McFarland, Holway, and Hurvich,<sup>14a</sup> after a searching analysis of their own extensive experiments and of other studies, state: "A high blink-rate need mean neither an increase in fatigue nor an increase in difficulty of seeing." They conclude that "the rate of blinking can hardly be considered as a valid index of visual fatigue." (b) Tinker,<sup>20</sup> in a study that has some bearing on the subject, found that frequency of blinking is an inadequate criterion of readability of print. (c) Bitterman,<sup>1</sup> working with 3 and 91 foot candles of light, found that when subjects read for 40 minutes, there was no significant difference in rate of blinking. In fact, the frequency of blinking was slightly greater under the 93 foot candles. Incidentally, Bitterman also found no significant difference in blink rate for reading large type vs. small type. His results, therefore, indicate that rate of blinking cannot be employed as an

index of ease of visual work. (d) The statistical treatment employed by Luckiesh and Moss<sup>9, 10, 12</sup> to treat their data is open to severe criticism. Tinker<sup>22, 23</sup> has questioned the appropriateness of the geometric mean which they employ in most comparisons.

The same criticism is raised by Hoffman.<sup>7</sup> In a searching analysis, Hoffman<sup>7</sup> severely criticises the use of the percentage technique employed by Luckiesh and Moss for presenting data, and for basing conclusions on percentage differences rather than on raw score differences. Percentage scores are notoriously unreliable. Furthermore, if the raw scores are below 100 (as most of them are), percentages magnify the differences. When percentages are used, therefore, the observed differences may be largely an effect of the derivation. Insignificant raw score differences may seem large when put into percentages. For instance, a typical average of 30 blinks during 5 minutes of reading is increased 10 per cent by a change of 3 blinks. Hoffman further points out that work decrement may be a more important variable than illumination changes in the results of Luckiesh and Moss. In general, he found little support for the contention that relatively high intensities are needed for effective and easy seeing. (d) Eames<sup>3</sup> criticises Luckiesh and Moss<sup>12</sup> for using relatively few subjects in their experiments (including blink rate studies) and for employing "test wise" subjects. As pointed out by Eames, "People who take tests repeatedly in a given field gradually learn what is expected of them" and are unintentionally influenced by this. Results obtained under such conditions cannot be representative of the reactions of the general population.

The accumulated evidence indicates that rate of blinking cannot be accepted as a criterion for specifying intensities of light for visual work.

*Decrease in heart rate*—Luckiesh<sup>8</sup> and Luckiesh and Moss<sup>9, 10, 12</sup> cite data on change of heart rate while reading for one hour under 1 foot candle and under 100 foot candles of light. No data are presented for intermediate levels of illumination. It is stated that heart rate decreased 10 per cent under the 1 foot candle and 2 per cent under 100 foot candles. The conclusion was that from the viewpoint of ease of seeing the 100 foot candle level is desirable. An experiment by McFarland, Knehr, and Berens<sup>14</sup> was designed to check the findings obtained in Luckiesh's laboratory. The results led to the conclusion that "It is questionable whether reliable criteria for determining adequate levels of illumination for tasks such as reading during short periods of time (approximately 2 hours) can be obtained in terms of . . . heart rate. . . ." Another check experiment was carried out by Bitterman.<sup>1</sup> He recorded heart rate while reading under 3 and under 91 foot candles of light. "The results do not support the conclusions of Luckiesh and Moss with respect to the value of heart rate" as an index "of the ease of visual work." In view of the above evidence we must reject heart rate as a criterion for prescribing illumination intensities for visual work.

*Decrease in convergence reserve*—Luckiesh and Moss<sup>9, 10, 12</sup> and Luckiesh<sup>8</sup> cite data on decrease in convergence reserve of ocular muscles after reading for one hour under 1 and under 100 foot candles of light. The decrease was less under the 100 foot candles. No data are given for the range between 10 and 100 foot candles. We do not know, therefore, whether the 100 foot candles level is significantly better than such levels as 20 or 30 foot candles.

*Visual adaptation*—Throughout their writings, Luckiesh and Moss<sup>8, 9, 10, 12</sup> emphasize that the eyes evolved under daylight levels of illumination and suggest the desirability of competing with

daylight by artificial means. They consistently ignore the fact that the eyes readily adapt to easy and effective seeing over a wide range of illumination intensities.

*Summary statement*—Examination of the data employed by Luckiesh and Moss as a basis for specifying foot candle levels for visual work reveals a general lack of validity of these results as criteria for ease of seeing. The data from visual acuity, muscular tension, and visibility measurements are misinterpreted or misapplied. The blink technique and rate of heart beat must be rejected because of lack of confirmation by independent workers. Furthermore, the methods of statistical analyses employed are frequently at fault. Any science of seeing based upon such an unstable foundation, therefore, must lack validity. Since these data have been the justification for specifying what appear to be excessively high levels of illumination intensity, we must reject such specifications unless justified by valid evidence from new experimentation.

#### LIGHTING CODES

*School lighting*—*The American Recommended Practice of School Lighting*<sup>27</sup> specifies the following minimum foot candles in service: 15 for classrooms, shops, and offices, 25 for sewing and drafting rooms, and 30 for sight-saving classes. There is general agreement on the importance of hygienic illumination in reading and study situations. The recommended foot candle levels seem satisfactory in view of research findings other than those cited in the code. There should be, of course, a sound experimental basis for recommendations of this kind. Tinker<sup>17</sup> has pointed out that the recommended practice for school lighting is based upon conclusions derived from misinterpreted experimental results. Fortunately, the recommended practice is

adequate in spite of inferences from inadequate data.

In a later publication by Sturrock,<sup>15</sup> the foot candle levels are not in an approved code but are listed as the levels found desirable in the experience of successful business institutions, i.e., good present-day practice. For schools the foot candles listed include: 30 for study halls, classrooms, general laboratories, general manual training; 50 for drawing room, close work in laboratory, sight-saving classes; 100 (considered especially low) for close work in manual training, in sewing rooms. It is obvious to the impartial person who knows the field that these suggestions represent more intense illumination than is necessary for adequate seeing in the school situation. Data summarized by Tinker<sup>18</sup> and additional experimental evidence<sup>19, 21</sup> indicate that about 15 foot candles are adequate for ordinary schoolroom tasks, and that 25 to 30 foot candles are satisfactory for the more severe tasks. Justification for the higher intensities is sought in the discussions of Luckiesh and Moss<sup>10, 12</sup> and Luckiesh.<sup>8</sup> These have been evaluated above.

*Office lighting*—*The Recommended Practice of Office Lighting*<sup>28</sup> includes the following foot candle levels: 50 for difficult seeing tasks such as accounting, bookkeeping, and drafting; 25 for ordinary seeing tasks such as general office work, private office work, mail rooms; 10 for casual seeing tasks such as reception rooms and washrooms; 5 for simple seeing tasks such as halls and stairways. Considering the severity of the tasks performed by some workers in general offices and special (as accounting) offices, the above recommendations are satisfactory. The 50 foot candles, however, should be considered liberal even for the difficult seeing tasks. The statement that "Higher values will contribute greatly to accuracy, speed and ease" cannot be accepted as valid.



Sturrock's<sup>16</sup> summary of good present-day practice does not deviate markedly from the recommended practice except that typing and prolonged reading of shorthand notes are listed at 50 foot candles and intermittent reading and writing at 30 foot candles. Each of these is about twice what is needed in terms of the visual task. The basis for the higher intensities is in terms of the discussions of Luckiesh and Moss.<sup>10, 12</sup> The inadequacy of these data has been pointed out above.

*Industrial lighting*—A wide range of illumination intensities is recommended for various tasks in industry.<sup>20</sup> Among the higher foot candle recommendations are: over 100 foot candles for such operations as extra fine assembly, automobile finishing, and inspecting, cutting and sewing dark goods, engraving, proof reading, final inspection of tire casings, grading and sorting tobacco products, and certain inspection work in textiles; 50 to 100 foot candles for such operations as automobile assembly line, glass works inspection, fine inspection, book-keeping, font assembly—sorting in printing industry, tin plate inspection, and stitching dark leather. With regard to all the recommendations, one is cautioned that the foot candles are minimum operating values and that in almost every instance higher values may be used with greater benefit.

It is stated that the recommendations are taken from a series of studies on the illumination needs of specific industries, or if not available there, from current good practice. Examination of these studies (listed on page 23 of report) indicates that in the main they are surveys rather than experiments. Furthermore, there is a lack of adequate descriptions of techniques employed. In a few instances a general description of methods was given. Apparently what happened was first to make a survey of practice. This was followed by some sort of job analysis

to determine what has to be discriminated. Then by reference to research studies (as those reported by Luckiesh and Moss in their books), to deduce the intensity level of illumination presumably needed for the specific job. This method has some virtue providing sound data are referred to, which was not done in these cases. In a few instances it is stated that visibility measurements were made. Occasionally installations to achieve the recommendations were made, the effect observed and additional modifications made. In no case was there experimental determination of the light intensity needed.

There are no valid experimental data which indicate that more than 50 foot candles are needed even for those practical visual tasks which approach threshold discrimination. Furthermore, as pointed out by Harrison,<sup>6</sup> visual comfort may decrease under high intensities.

*Home lighting*—The most recent recommended practice for home lighting<sup>30</sup> specifies intensities ranging from 10 foot candles on card tables to 100 and more for sewing on dark goods. Forty foot candles are recommended for such situations as children's study table, kitchen work counter, laundry, and for prolonged reading. There is no valid reason for going above 25 to 30 foot candles for the more severe visual tasks in the home.<sup>18</sup> Approximately 15 foot candles is adequate for many of these visual tasks. Figure 1 in the *Recommended Practice*<sup>30</sup> is misleading. "This chart shows the extent to which occupations and poor seeing conditions leave their mark on eyesight." The implication is that poor illumination causes ocular disability. There are no valid data which indicate this to be so. This chart represents an unjustified form of propaganda.

*Present-day practice*—Sturrock<sup>15</sup> has assembled foot candle levels of illumination which are labeled "good pres-

ent-day practice." The tables are preceded by a classification (after Luckiesh and Moss) of foot candle needs for visual discrimination of tasks varying in difficulty. The material is apparently designed as a guide but is not necessarily in the form of recommendations. This sort of thing is valuable in many ways. But since it is based to a considerable degree upon the material presented by Luckiesh and Moss<sup>10, 12</sup> and by Luckiesh,<sup>8</sup> the illumination intensities are excessively high in some instances, as 100 foot candles for sewing and proof reading, and 50 foot candles for reading small type and for kitchen counters. It should be pointed out, however, that much of the material is fairly satisfactory.

*Summary — intensity standards—* Recommended practice prior to 1940<sup>27</sup> is fairly adequate, but as new codes are issued at later dates the apparent tendency has been to recommend as intense lighting as the traffic will bear. This is justified by referring to the work of engineers (largely Luckiesh and Moss) who state that these high intensities are still less than adequate for easy seeing. As pointed out above, both the experiments and the conclusions which are cited as fundamental are frequently invalid. Furthermore, the data are out of line with other independent experimental results.

#### VISUAL FACTORS

*Eye disabilities—*It is generally accepted that eyes with disabilities, even when corrected by glasses, need brighter light than normal eyes for adequate visual discrimination. Ferree and Rand<sup>4</sup> and Ferree, Rand, and Lewis<sup>5</sup> are usually cited as supporting evidence. In the first study,<sup>4</sup> it was found that apparent diopters of accommodation increased more for 14 presbyopes than for normal eyes in going from 1 to 5 to 25 foot candles of light. Interpolation

indicates that for the normal eyes the curve of improvement shows little rise after about 8–10 foot candles; for the presbyopes, after about 15 foot candles. In addition *one* myope, and *one* presbyope were compared with a normal subject by measuring apparent diopters of accommodation at 13 intensities from 0.5 to 100 foot candles. The curve of efficiency for the normal person improved rapidly to 5 foot candles, then more slowly to about 20 and very gradually thereafter; for the myope there was considerable improvement to about 20 foot candles and little thereafter; for the presbyope there was considerable improvement to about 38 foot candles, and then slower improvement to 100 foot candles. It is of course impossible to generalize from *one case*, but apparently those with eye disabilities need somewhat brighter light than normals for clear seeing. This does not mean that they need 100 foot candles or more as some people wish to imply.

In the other study<sup>5</sup> Ferree and Rand were concerned with distant (20 feet) vision. The visual acuity for 4 presbyopes was compared with acuity for 3 normal people. The presbyopes continued to gain in visual acuity from 25 to 100 foot candles while the normal eye made little gain within this range. Since there is little or no relation between acuity of distant vision and acuity at near vision, these results have no bearing upon visual discrimination at the work surface (desk, work bench, etc.). Furthermore, one should not prescribe illumination for supra-threshold tasks in terms of threshold measurements (visual acuity). There is no evidence from these studies which implies that excessively high foot candles are necessary for those with ordinary visual disabilities. Rather, they suggest a moderate increase for those with corrected vision as compared with normal eyes.

*Visual adaptation*—It is well established that the eyes readily adapt to easy and effective seeing over a wide range of illumination intensities. This adaptation is rather slow in going from bright to dimmer illumination (for practical purposes, 15–20 minutes), and rapid in going from dim to bright illumination (1–3 minutes). Tinker<sup>19</sup> has demonstrated that when adaptation is incomplete on shifting to a lower level of illumination, speed of perception is retarded. When adaptation is adequate, however, visual perception in reading is fully effective from 3 foot candles up for normal eyes in reading legible print. In another study, Tinker<sup>20</sup> showed that subjects tend to prefer for reading approximately the illumination intensity to which they have been adapted, whether it be 8 or 52 foot candles. These data indicate that readers tend to consider comfortable for easy reading any one of a wide range of illumination intensities provided such intensities are above critical levels and provided visual adaptation is adequate. Codes of lighting have consistently ignored the rôle of visual adaptation in seeing. They carefully point out that the eye has evolved under the bright illumination of daylight, but do not mention that the eye also evolved to see adequately at low as well as at high intensities of light.

#### ILLUMINATION FOR ADEQUATE SEEING

*Critical levels of illumination*—The critical level of illumination is the intensity beyond which there is no further increase in efficiency of performance as the foot candles become greater. Tinker<sup>18</sup> has summarized the data for critical levels of illumination: for reading of legible print (about 10 point on good paper) by adults, it is approximately 3 to 4 foot candles; for reading and study of children, 4 to 6 foot candles; for arithmetical computations, less than 9.6 foot candles; for sorting mail,

8 to 10 foot candles; for the exacting task of setting 6 point type by hand, 20–22 foot candles; and for very fine discrimination required to thread a needle, 30 foot candles. In a later study, Tinker<sup>21</sup> found the critical level of illumination for reading newspaper print to be about 7 foot candles.

*Adequate levels of illumination*—It is obvious that visual work should not be done at critical levels of illumination. There should be an adequate margin of safety to provide for individual variation and the like. For such visual tasks as reading good sized print (10 to 11 point) on a good quality paper, i.e., print of good legibility, 10 to 15 foot candles should provide hygienic conditions when one's eyes are normal. For situations comparable to the reading of newsprint, 15 to 20 foot candles should be adequate. In situations involving the reading of handwriting and other comparable tasks, 20 to 30 foot candles seem desirable. For tasks comparable to discrimination of 6 point type, there should be 30 to 40 foot candles. And for the most severe tasks encountered in work-day situations, 40 to 50 foot candles will be found adequate. There is no valid experimental work now available that indicates a need for over 50 foot candles intensity for adequate visual discrimination. The intensity values from 10 to 20 should be increased somewhat (5 to 10 foot candles) for eyes with slight disabilities or for those with corrections. For the higher values, however, no practical gain will be achieved for these people by increasing the intensity. The above suggestions hold for school children as well as for adults. In general, the child has much less severe visual tasks than adults.

Intensity of illumination cannot be prescribed without coördinating it with other factors such as distribution of light and brightness contrast. A good example of the uselessness of excessively

bright light is found in the study by Darley and Ickis.<sup>2</sup> They were concerned with vision in the drafting room, a very severe visual task. In comparing 30 with 75 foot candles of indirect light, they found the efficiency ratings for the two to be only slightly different. When they compared 40 with 80 foot candles of direct light (troffer) under conditions of no reflected glare, they also found no significant differences in the efficiency ratings. The observations of Harrison<sup>6</sup> are relevant here. He points out the dangers of glare with installations of 50 foot candles and above of artificial illumination.

#### SUMMARY REMARKS

Examination of the literature upon which lighting recommendations are based reveals that some technique of experimentation are invalid, and that interpretations from certain other data are unwarranted. Some of the recommendations are adequate, others are not. The trend seems to be to specify as high intensities as the traffic will bear and at the same time warn the consumer that if he uses still higher intensities, he will improve his ease of seeing. All will agree that there should be sufficient light for adequate seeing. It is high time, however, that the consumer know what is adequate and what is surplus.

In general the recommended practice concerning distribution of light, brightness contrast and color of light is satisfactory.

#### REFERENCES

1. Bitterman, M. E. Heart Rate and Frequency of Blinking as Indices of Visual Efficiency. *J. Exper. Psychol.*, 35:279-292, 1945.
2. Darley, W. G., and Ickis, L. S. Lighting and Seeing in the Drafting Room. *Illuminating Engineering*, 36:1462-1487, 1941.
3. Eames, T. H. Review of M. Luckiesh and F. K. Moss—Reading as a Visual Task. *Columbia Optometrist*, 16:7, 1942.
4. Ferree, C. E., and Rand, G. The Effect of Intensity of Illumination on the Near Point of Vision and a Comparison of the Effect for Presbyopic and Non-presbyopic Eyes. *Tr. I.E.S.*, 38:590-611, 1933.
5. Ferree, C. E., Rand, G., and Lewis, E. F. The Effect of Increase of Intensity of Light on the Visual

- Acuity of Presbyopic and Non-presbyopic Eyes. *Tr., I.E.S.*, 29:296-313, 1934.
6. Harrison, W. What Is Wrong with Our 50 Foot-candle Installations? *Tr., I.E.S.*, 32:208-223, 1937.
7. Hoffman, A. C. Luckiesh and Moss on Reading Illumination. *J. Appl. Psychol.* (in press).
8. Luckiesh, M. *Light, Vision and Seeing*. New York: Van Nostrand, 1944, 323 pp.
9. Luckiesh, M., and Moss, F. K. *The New Science of Seeing*. Cleveland: General Electric Co., 1934, 36 pp.
10. Luckiesh, M., and Moss, F. K. *The Science of Seeing*. New York: Van Nostrand, 1937, 548 pp.
11. Luckiesh, M., and Moss, F. K. Illumination and Eye Health. *New England J. Med.*, 224:1117-1119, 1941.
12. Luckiesh, M., and Moss, F. K. *Reading as a Visual Task*. New York: Van Nostrand, 1942, 428 pp.
13. Lythgoe, R. J. *The Measurement of Visual Acuity*. London: His Majesty's Stationery Office, 1932, 85 pp.
14. McFarland, R. A., Knehr, C. A., and Berens, C. Metabolism and Pulse Rate as Related to Reading under High and Low Levels of Illumination. *J. Exper. Psychol.*, 25:65-75, 1939.
- 14a. McFarland, R. A., Holway, A. H., and Hurvich, L. M. *Studies of Visual Fatigue*. Boston: Graduate School of Business Administration, Harvard University (Soldiers Field), 1942, 255 pp.
15. Sturrock, W. Levels of Illumination. *Magazine of Light*, 14, 4:26-36, 1945.
16. Tinker, M. A. Cautions Concerning Illumination Intensities for Reading. *Amer. J. Optom.*, 12: 43-51, 1935.
17. Tinker, M. A. The New "Standards" for School Lighting. *School and Society*, 49:95-96, 1939.
18. Tinker, M. A. Illumination Standards for Effective and Comfortable Vision. *J. Consult. Psychol.*, 3:11-20, 1939.
19. Tinker, M. A. The Effect of Illumination Intensities upon Speed of Perception and Upon Fatigue in Reading. *J. Educ. Psychol.*, 30:561-571, 1939.
20. Tinker, M. A. Effect of Visual Adaptation upon Intensity of Light Preferred for Reading. *Amer. J. Psychol.*, 54:559-563, 1941.
21. Tinker, M. A. Illumination Intensities for Reading Newspaper Type. *J. Educ. Psychol.*, 34: 247-250, 1943.
22. Tinker, M. A. A Reply to Dr. Luckiesh. *J. Appl. Psychol.*, 27:469-472, 1943.
23. Tinker, M. A. Review of M. Luckiesh and F. K. Moss—Reading as a Visual Task. *J. Appl. Psychol.*, 27:116-118, 1943.
24. Tinker, M. A. Illumination Intensities Preferred for Reading with Direct Lighting. *Amer. J. Optom. and Arch. Amer. Acad. Optom.*, 21:213-219, 1944.
25. Tinker, M. A. Review of M. Luckiesh—Light, Vision and Seeing. *J. Appl. Psychol.*, 29:252-253, 1945.
26. Tinker, M. A. Validity of Frequency of Blinking as a Criterion of Readability. *J. Exper. Psychol.* (in press).
27. *American Recommended Practice of School Lighting*. New York: Illuminating Engineering Society and American Institute of Architects, 1938, 60 pp.
28. *Recommended Practice of Office Lighting*. New York: Illuminating Engineering Society, 1942, 47 pp.
29. *American Recommended Practice of Industrial Lighting*. New York: Illuminating Engineering Society, 1942, 51 pp.
30. *Recommended Practice of Home Lighting*. New York: Illuminating Engineering Society, 1945, 40 pp.

# Recent Developments in Murine Typhus Fever Control\*

JOHN S. WILEY

*Sr. Asst. Sanitary Engineer, U. S. Public Health Service, Atlanta, Ga.*

MURINE, or rat-borne, typhus fever in the United States increased steadily from 1913, when the first case was reported in Georgia, to 1940. During 1940 the reported cases dropped nearly a thousand to 1,845, but during the next four years increases of about a thousand cases a year were recorded (Figure 1). In 1944, more than 5,300 cases were officially reported to state health departments. The total reported cases for 1945 is 5,167, which represents the first decrease since 1940. Since reporting has been far from complete, it is believed that the 5,167 cases reported in 1945 may represent about 25,000 actual cases of murine typhus fever.

Although typhus has been reported from 37 states and the District of Columbia during the last five years, over 67 per cent of the cases have been confined to 100 counties in nine southern and southeastern states (Figure 2). These counties, however, have an annual incidence of 10 or more cases per year for the last five years and in one is greater than 100 cases per year. Annual morbidity rates ranged up to more than 430 per 100,000.<sup>1</sup>

In the North, typhus can be almost universally traced to very small areas of the business sections of towns or cities, and usually it will be found that cases were contracted in one or more food handling establishments. There is

little or no typhus traced to residential or rural sections north of about 33° north latitude.<sup>2</sup> South of this line, however, especially in southwest Georgia, southeast Alabama and certain parts of Texas, typhus strikes anywhere and as much as half or more of the cases are contracted in residential and rural areas.

Typhus is primarily a disease of rats, secondarily of man, but it is as debilitating to humans as, for example, typhoid fever. While the general public is not alarmed at the high incidence of typhus in certain sections, this disease is equally as important and should receive as much attention as is given to typhoid fever. It is believed that rodent ectoparasites, principally fleas, are the vectors transmitting typhus from rat to rat and rat to man. It is not known whether typhus is transmitted directly by biting or indirectly as from infected flea excreta. It is believed, however, that

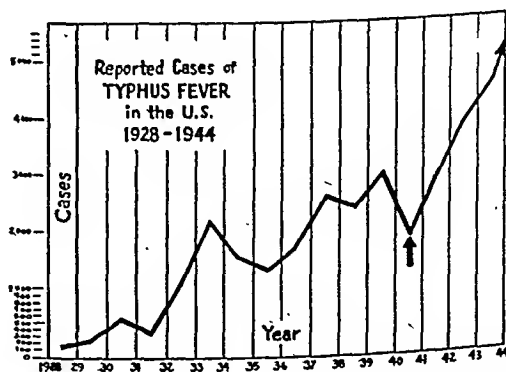


FIGURE 1—Reported cases of typhus fever have increased nearly a thousand per year since 1940.

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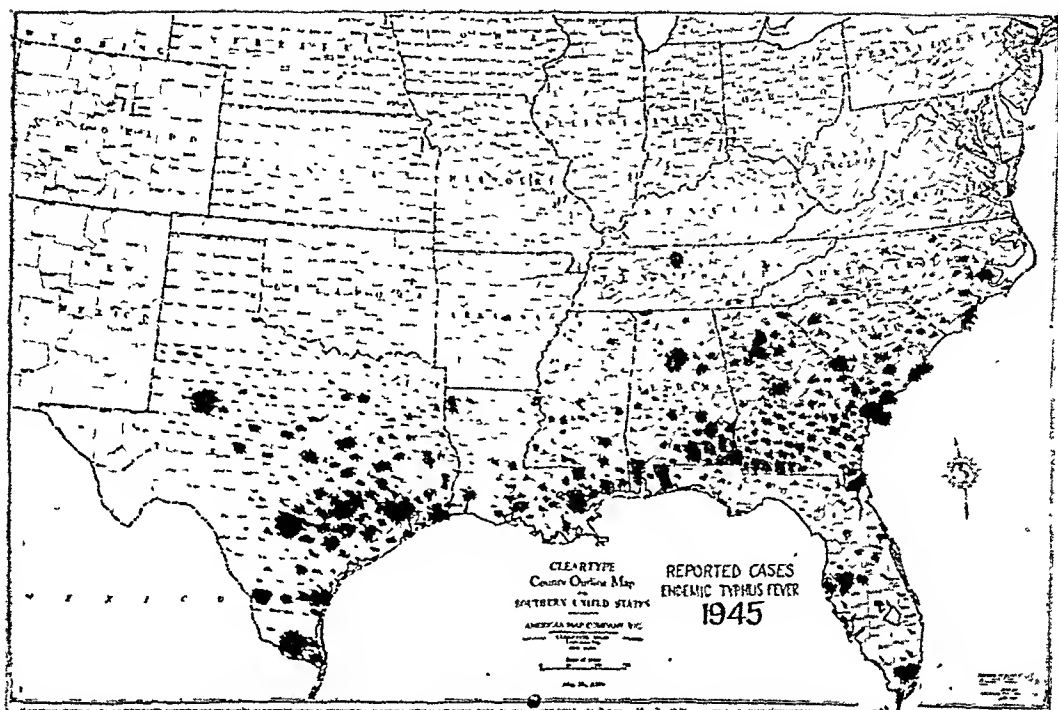


FIGURE 2—Distribution of Murine Typhus Fever in Southeastern United States 1945

among the ways that man may become infected with typhus fever are: ingestion of food infected by flea feces or rat urine, inhalation of dust previously infected by rats or fleas, and infection through the broken skin. Although it is very possible that a rat may be infected with the typhus *Rickettsiae* from another rat without an intermediate vector, the rat flea seems to predominate as the means of transmission.

#### METHODS OF TYPHUS CONTROL

Typhus control methods may be divided into three categories: control of rats, control of rat fleas or ectoparasites, and control by vaccination.

##### *Rat Control*

Rat control may be attained by one or more of three methods: community poisoning programs, ratproofing and eradication in business establishments of towns, and good general sanitation. Poisoning and other rat extermination measures have been applied

for many years by individuals, commercial pest control operators and local health departments with the assistance of state health or other departments, the U. S. Fish and Wildlife Service, and the U. S. Public Health Service. Sufficient data on rat census figures before or after poisoning are not available to know to what level the rat infestation must be reduced to control typhus. Poison baits are often ineffectual; poison bait was distributed throughout one entire town with apparently not a single bait being taken by rats. Poisoning campaigns must be repeated for effective rat control or there must be some follow-up to eliminate heavily infested areas that still remain. Such campaigns cost about \$100 to \$125 per 1,000 population, and they have the advantage of being rapidly performed. Where typhus is widespread in cities or counties, it appears desirable to distribute poison at sufficient frequency to keep rat infestation at the lowest practicable point. Poisoning pro-

grams have definite economic value and public health significance aside from typhus control, and are therefore highly recommended. In Coffee County, Alabama, a county-wide poisoning program with two applications in a period of nine months reduced typhus fever by 50 per cent while the five adjacent counties showed a concurrent decrease of 5 per cent.

Ratproofing of all existing business establishments under an ordinance, followed by eradication of all rats within them has demonstrated at Orangeburg, S. C., that typhus in cities north of the highly endemic zone can be eliminated. The original cost of ratproofing and rat eradication in existing buildings is considerably higher than poisoning. However, businessmen are almost always willing to pay these costs which in the fiscal year 1945 amounted to \$80 per building for ratproofing, and \$11 per establishment for rat eradication. Usually they realize a complete return of their investment within a year and sometimes the savings in rat damage pays the cost of the work in a month. Ratproofing programs therefore require only a limited appropriation of public funds and usually receive wide approval due to their economic, esthetic, and public health significance.

Where all human cases of typhus originate in business establishments, a ratproofing and rat eradication program alone will control typhus but will not control the rat population of the city. Even in the areas of highest endemicity, ratproofing projects may reduce typhus by 50 per cent, since business establishments are still the principal foci for typhus. These programs, however, must be maintained indefinitely by regular inspectional service by the health department followed by corrective measures by the building owners or occupants when indicated. A completely ratproof and rat-free building will not long remain so if rats are

present in adjacent environs and they have incentive to enter the building. Permanent inspectional service should be a part of the regular activities of the local health department.

Ratproofing is slower than other typhus control measures but, even so, all business establishments in a large city can be treated in two or three years if materials and labor are available. Increasing the number of crews at intervals is simple since the revolving fund principle is utilized. If that part of the typhus control ordinance relating to new construction is enforced, it will eventually result in all premises being constructed in a ratproof manner. At present ratproofing of poorer class residences in the South is impractical.

General sanitation of the community is equally as important as rat elimination operations in the control of typhus. To be effective, any method of rat control must be accompanied by proper community sanitation measures, particularly with respect to the elimination of rat food and harborage. Items such as proper garbage and refuse storage, collection and disposal (Figure 3); correct stacking of goods to eliminate harborages; and the isolation of stock and chicken feed from rats cannot be over-emphasized. Typhus control programs therefore tie in very closely with good general sanitation activities.

#### *Control of Rat Ectoparasites*

A second method of typhus control attacks the intermediate vector rather than the host. Control of rat fleas can be attained by the application of DDT dust to rat runs and other places frequented by rats.<sup>3</sup> Thus, if fleas are either the direct or indirect transmitters of typhus, residual dusting may be expected to control typhus among rats and also among humans. While the application of DDT dust is fairly expensive, it has the distinct advantage over other methods of typhus control



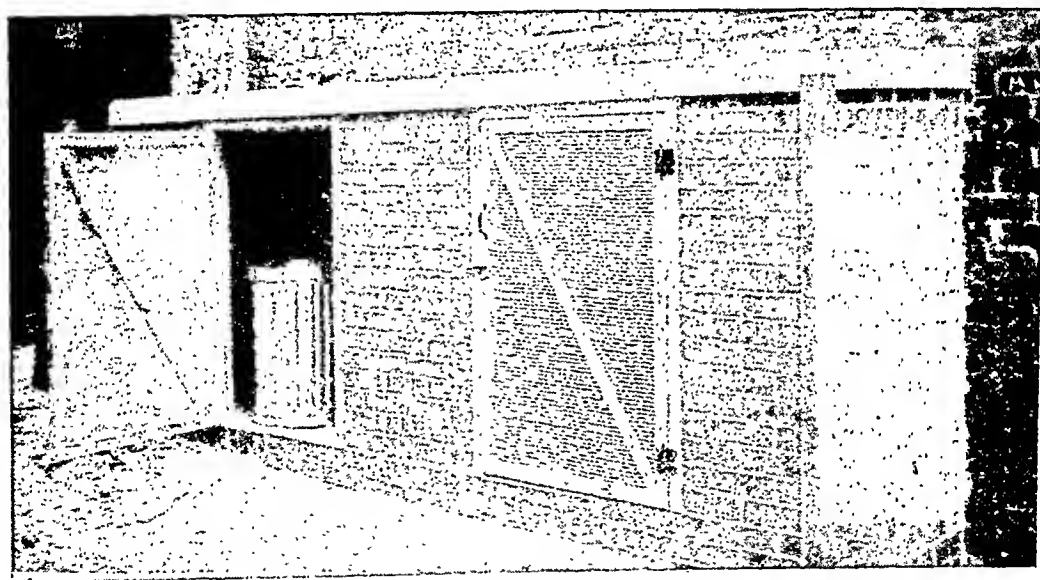
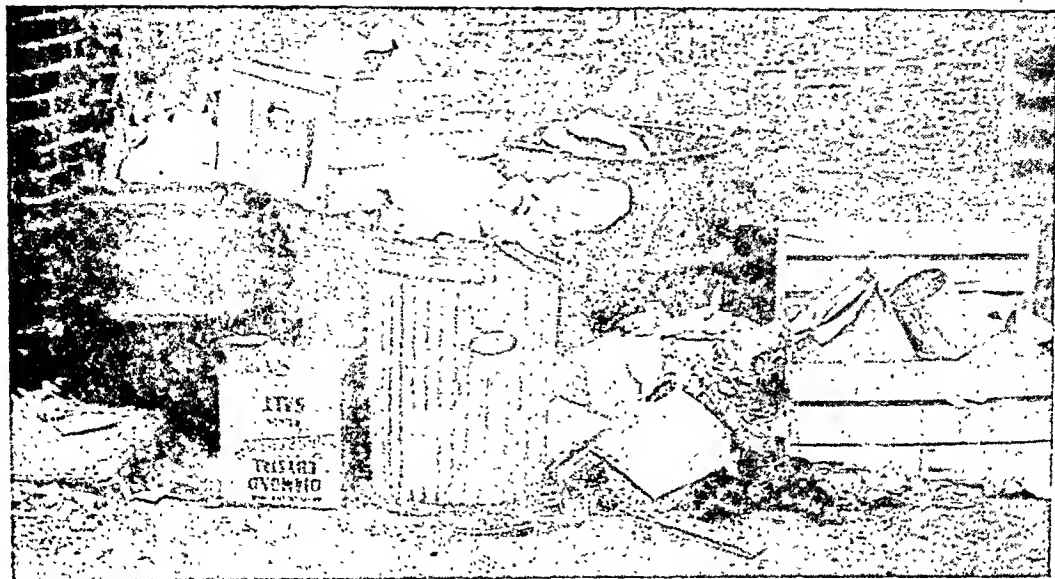


FIGURE 3—An unsatisfactory and a satisfactory method of garbage and refuse storage

in that quick results may be obtained. Residual dusting for typhus control is not a very popular method because it fails to reduce the rat population. Instead, it provides a healthier, or at least more comfortable environment for the rat. Also dusting does not control any other rat-borne disease, except plague.

Residual dusting should be considered as a temporary means of typhus control similar to residual spraying of houses for malaria control. Rat poison-

ing for control of typhus is considered to be comparable to larviciding as a means of controlling malaria; whereas, ratproofing may be likened to drainage. All three methods should be conducted together in a well balanced typhus control program. Such a permanent program should be under the direction of the local health department.

#### *Vaccination*

Vaccination as a preventive for murine typhus is in the experimental stage



at present since murine typhus vaccine has only recently been developed. Vaccines made from strains of louse-borne typhus *Rickettsiae* have not appeared to be satisfactory in preventing murine typhus but may lessen the severity of the disease. Mass vaccination utilizing murine typhus vaccine has been conducted recently in one town in Texas.

#### TYPHUS CONTROL OPERATIONS

##### *State Health Department—U. S. Public Health Service Program*

By combining malaria, *Aedes aegypti* and typhus control activities and jointly utilizing existing personnel and equipment, it has been possible for the Public Health Service to expand typhus control operations of state health departments since July 1, 1945, from 20 ratproofing programs to 101 projects as of October 15, 1945. Of these, 56 projects involve the use of DDT dust, some accompanied by rat poisoning, and 45 projects combine ratproofing and eradication with DDT dusting. Funds for the present fiscal year will not permit much more expansion than has already been attained. In these projects Public Health Service personnel, which are under the direction of state health departments, have been increased from about 60 to nearly 400 during the first 3½ months of the current fiscal year. In the aggregate, approximately 67 per cent state and local participation is being secured. All methods of rat and rat-flea control are advocated—poisoning, ratproofing and eradication, good general sanitation, and residual dusting. Coördination and stimulation of federal, state, and local (as well as private companies and individuals) effort to achieve maximum control of rats and their ectoparasites is the key operational objective.

##### *Ratproofing and Rat Eradication Operations*

Ratproofing is defined as a relatively

inexpensive method of construction designed to keep rats and mice from entering business buildings and to limit their travel within buildings (as from establishment to establishment and room to room) as much as possible. It embraces all of the following to the extent that they are feasible: vent stoppage, elimination or reduction of interior and exterior rat harborages, proper storage of garbage, and proper stacking of materials and merchandise. The construction proceeds block by block until all business buildings are completed. The complete elimination of interior rats is started immediately after each establishment has been ratproofed. Enforcement of the ordinance is very rarely necessary but is resorted to in the case of extremely recalcitrant owners.

While it would be very desirable for private industry to conduct the ratproofing and rat eradication operations systematically in accordance with health department specifications, experience at several important cities during the past four years indicates that programs relying upon private enterprise have proceeded either extremely slowly or not at all. For this reason it has been necessary for health departments to provide trained crews who will conduct the operations on a contract basis. Such is not a normal function of a health department, and it is hoped that building contractors and pest control operators will soon provide this service. The increasing interest recently expressed by these groups is encouraging. Inspectional service by personnel, who have received the necessary intensive training in ratproofing and eradication, is properly a function of the health department where rat-borne diseases are a factor. A six week intensive field and didactic training program is offered periodically by the U. S. Public Health Service in Atlanta.

It is not within the scope of this discussion to describe the various construc-

tion items involved in ratproofing buildings. Work may be conducted from truck or trailer workshops or from fixed workshops equipped with ordinary carpenters' and masons' tools plus metal bending brakes, metal slitters, tinsnips, and metal punches. The trend of construction today is toward more durable and neater work involving concrete, sheet metal, and masonry rather than wood. Screens for vents and windows, for example are now made with heavy hardware cloth or expanded metal mounted in riveted sheet metal frames. Metal channels and cuffs, rather than false flashing, are provided to protect rear and side doors against rat entrance. Where front doors require treatment, attractive kick plates are installed. The construction of plain or flanged metal frames for screens and of channels and cuffs, for doors has been greatly speeded up and simplified through the use of templates. A method of constructing concrete curtain walls rapidly has been developed with the use of 2" x 4" spacers and corrugated cardboard forms.

Although ratproofing is the more expensive part of the work, the elimination of all rats within the ratproofed buildings is more important. Various means are used to eradicate rats, including the use of poison water, poison baits, fumigants, and traps. Two new rodenticides have helped materially in reducing the average time required to free establishments of rats from 2 or 3 months to 2 or 3 weeks. These are "1080" and "ANTU."

Water poisoned with 1080 (sodium fluoroacetate) is the most effective means of eradicating rats aside from fumigation.<sup>4</sup> This chemical is extremely toxic and has advantages over other rodenticides in that it is more readily accepted and kills more rats and mice before they reach inaccessible places. With a concentration of 12 to 14 gm. per gal. of water, placed in  $\frac{3}{4}$  oz. paper cups, an average of six

rodents per 10 cups or 11 rodents per establishment were recovered during a two month reporting period in 67 ratproofed establishments. From the standpoint of dead rodent recovery, 1080 was more than ten times as effective as all other poisons used last year in typhus control programs. Extreme care must be exercised in the use of 1080 because it is very toxic to all animals, and no antidote has yet been developed. The amount of poison required to kill an adult Norway rat is sufficient to kill a dog 25 times as heavy or a cat 10 to 17 times as heavy as the rat. This rodenticide is commercially available to city, state, and federal agencies, and will soon be released to qualified pest control operators.

The compound "ANTU" (alpha-naphthyl-thiourea) has been used by various investigators in poison grain baits, poison water, and as a dust.<sup>5</sup> On typhus control programs the latter method only has been attempted. Excellent to poor kills of Norway rats and practically no results against the smaller roof rats have been reported. A 20 per cent mixture of the poison in flour or talc is applied to rat runs in a manner similar to that for DDT residual dust. The poison apparently is ingested by rats during cleaning and preening after getting it on their bodies. Since fairly large quantities of ANTU are required when applied in dust patches, this method probably will be confined to special establishments where it is desired to eradicate Norway rats. In prepared baits the compound apparently compares favorably with other rodenticides when considered as a specific poison for Norway rats. Two advantages of ANTU are its high toxicity to certain rats as against a low toxicity for most other animals, and its apparent slight emetic property. A decided disadvantage, however, is that ANTU tolerance in rats is quickly established and lasts for several months.

Originally trapping, an expensive method of rat eradication, was the sole operation conducted in the ratproofed buildings. With the recent advances in poisoning procedures and the development of new rodenticides, trapping is not required at all as an eradication measure in more than one-third to one-fifth of the establishments. Other methods of eradication continue to be utilized, such as: dusting burrows and small enclosed harborages with calcium cyanide; fumigation of entire buildings with hydrocyanic acid gas; and the use of three or more types of baits poisoned with such rodenticides as 1080, thallium sulfate, zinc phosphide, arsenic trioxide, or fortified red squill. Red squill is safe to use out-of-doors or where animals other than rats might eat it since it has an emetic property. It is therefore the most common rodenticide used in poisoning campaigns.

As important as the initial ratproofing and rat eradication, is the necessity for inspectional service to insure the maintenance of buildings in a rat-proof and rat-free condition. The general policy on typhus control programs is to continue inspectional service by the health department as a part of the permanent sanitation program but to abstain from making later contracts for ratproofing or for eliminating rat reinfestations. These are considered to be maintenance responsibilities of owners and occupants of the buildings.

#### *Residual Dusting Operations*

A 10 per cent DDT—90 per cent pyrophyllite or talc mixture is applied by means of simple hand dusters to rat runs, harborages, entrances, feeding points, and other places utilized by rats. Dusting, except in a few county-wide projects where typhus is the most widespread, is presently confined largely to business establishments and significant typhus foci areas. The dust is generally applied in patches rather than

being distributed in clouds, a fairly heavy layer being utilized for the residual effect. Rats walking through the dust get it on their bodies and carry it to their nests. The dust does not kill rats except occasionally when they happen to inhale or ingest a direct blast of it. Cats and dogs are carefully dusted since it has been determined that they occasionally harbor infected rat fleas. Care is exercised in dusting around foodstuffs and restaurant equipment, but otherwise there is little danger from the application of DDT dust. The average amount of dust mixture used per premise varies from 1 to 5 lbs., depending upon the type, size, and degree of rat infestation.

A large hand shaker about the size of a gallon can, holding slightly less than 5 lbs. of dust, is generally used for dusting along runways that are readily accessible. This shaker has a handle which can be mounted on either the wide or narrow side as desired. The top is provided with 20 or 24 mesh screen across the entire surface or 16 to 24 mesh screen over a strip only an inch or two wide with the rest covered by metal. For the more inaccessible places, a small hand shaker having a capacity of about 1 lb. is utilized. A common mailing tube with holes punched in the end or with a screen in the top provides a satisfactory shaker. A pole may be fastened to the tube when it is desired to dust on the top of overhead pipes or beams or in back of merchandise.

A hand pump duster, similar to that used by gardeners, is another very useful piece of equipment. Such a pump is used for dusting runways in the open or in fairly concealed places and also for dusting enclosed harborages or burrows. Pumps with fairly large containers, holding about 3 lbs., are preferable to smaller types. In order to produce a stream rather than a cloud of dust, the usual commercial

duster only needs to be operated in an upside-down position. Attaching a flashlight to the duster assists materially in the operation. Other dusters with somewhat limited use are the foot pump, similar to the pump used in cyanogassing burrows, and the rotary duster.

Every room and all outbuildings are checked for evidence of rats, since they sometimes live in an isolated area where food is available, not straying out for days or weeks. Dust is generously used in rat holes and patches are placed around their periphery. Calcium cyanide rather than DDT generally is used for dusting burrows because this will kill the rat as well as its fleas.

At the present time, all rat control activities in typhus areas are preceded by residual dusting, because of the possibility that infected fleas leaving their dead host may survive to transmit their

infection to man. Although DDT dust acts quickly when it comes in contact with fleas, it may be several days before this occurs. For this reason dusting precedes rat eradication measures by at least five days when practical. DDT dust may prove not only to be a good temporary method of controlling typhus but also to be of great advantage in permanent rat control programs along with the other measures.

#### EVALUATION OF RESIDUAL DUSTING OPERATIONS

The adequacy of DDT dusting is being evaluated by inspection and by trapping live rats before and at various intervals after dusting. Fleas and other ectoparasites are collected, identified, and enumerated and, by determining the flea index (the number of fleas per rat) the degree of control is readily

CONTROL OF *X. cheopis* FLEAS WITH 10% DDT DUST  
MODERATE TO HEAVY DOSAGES - ELEVEN URBAN ESTABLISHMENTS  
APPROXIMATELY 8 LBS PER ESTABLISHMENT

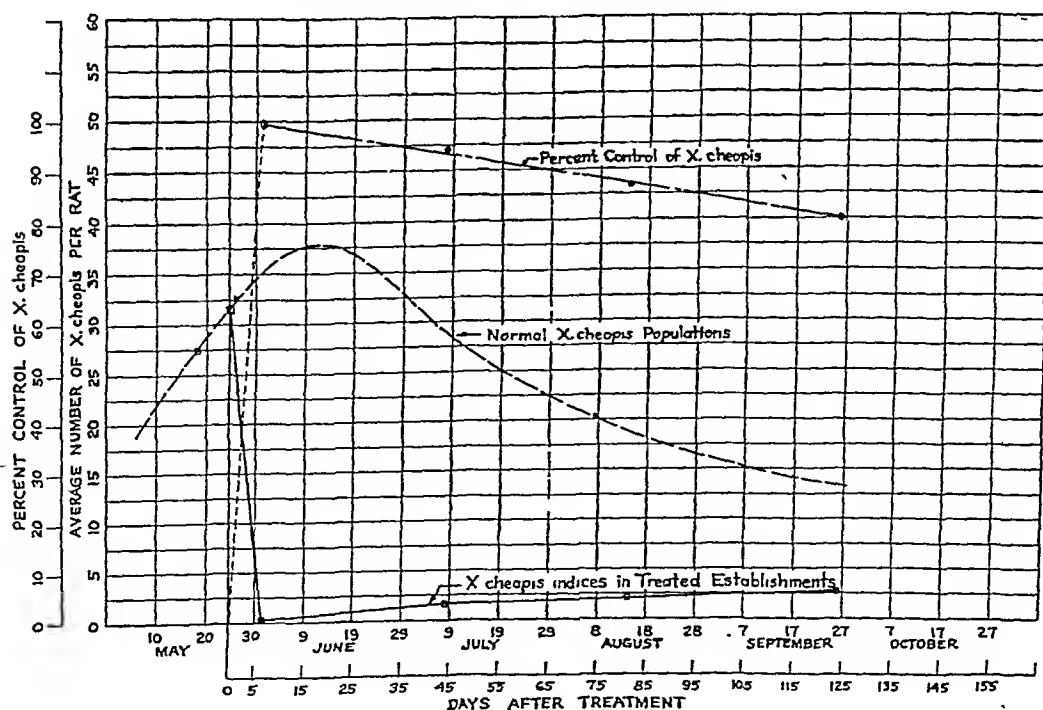


FIGURE 4—DDT has a residual effect in the control of rat fleas.

ascertained. Better than 85 per cent control of rat fleas has been obtained at Savannah for as long as 3 months after dusting. The principal flea in the South is the Indian rat flea, *Xenopsylla cheopis*, which is believed to be the main typhus vector since it is most prevalent during the human typhus season—May throughout October (Figure 4).

To determine further the control of typhus, heart blood specimens are collected from live rats. These are centrifuged and the serum is subjected to the complement-fixation test, a laboratory determination for murine typhus fever.<sup>6</sup> Results of such tests on specimens from the San Antonio dusting program have recently been received. Rats were trapped in two similar areas during September and October, 1945. Premises in one area had been dusted the previous May and June while those in the other area were untreated. Positive complement-fixation tests were recorded for 24.5 per cent of all rats caught in the treated area, and for 46.9 per cent in the untreated area. However, in the new generation of rats, only 4.1 per cent were positive in the treated area as compared to 42.9 per cent of the young rats in the untreated area. These later data indicate that typhus among rats was reduced more than 90 per cent. The adult rats in the two areas showed no appreciable differences; this is to be expected, because, once a rat has typhus fever, it continues to have complement-fixing antibodies in its blood serum throughout the remainder of its life. Thus, although the rat is probably not capable of transmitting typhus for more than a month or two after it becomes infected, it would be expected to give a positive complement-fixation reaction 4 months later.

Since most of the residual dusting activities did not start until recently, it is still too early to determine what effect DDT will have on the human

typhus picture. However, the prospects are bright for a substantial reduction in typhus during 1946.

#### SUMMARY

Murine typhus fever, which has increased from 1,800 reported cases in 1940 to 5,100 in 1945, has become a major public health problem in the South. To combat its spread, the U. S. Public Health Service has assisted ten southern states in providing adequate typhus control staffs in the state health departments, in expanding ratproofing and rat eradication activities, and in inaugurating a new method consisting of DDT dusting to control rat fleas and other ectoparasites. State and U. S. Public Health Service coöperation with other agencies in rat poisoning methods is also being attempted.

Results of rat poisoning activities utilizing the new rodenticides 1080 and, to a limited extent, ANTU have been so successful that the average time necessary to free ratproofed buildings of rats has been greatly reduced. Ratproofing has been improved significantly through the use of more permanent materials and more efficient, economical, and neater construction.

The application of DDT dust to rat runs has demonstrated that excellent rat-flea control can be obtained for periods up to 3 months; and limited data indicate that a substantial reduction in typhus among rats may be obtained by this method. Since general rat poisoning and DDT dusting are temporary measures and ratproofing activities are limited greatly in scope due to the type of structures in endemic typhus areas, all three methods are indicated in a well balanced program. Direction of such a program is provided by the health department as a part of general sanitation activities, but the coöperation of all agencies, public and private, interested in rat control is attempted.

## REFERENCES

1. Medical Division, U.S.P.H.S., *Malaria Control in War Areas; Epidemiological Data for Murine Typhus Control Activities*, June, 1945.
2. Eskey, C. R. Murine Typhus Fever Control. *Pub. Health Rep.*, 58:631-637 (Apr. 16), 1943.
3. Davis, D. E. The Control of Rat Fleas (*Xenopsylla cheopis*) by DDT. *Pub. Health Rep.*, 60:485-489 (May 4), 1945.
4. Kalmbach, E. R. Discussion—"Ten-Eighty," a War-Produced Rodenticide. *Science*, Aug. 31, 1945, pp. 232-233.
5. Richter, C. P. The Development and Use of Alpha-Naphthyl thiourea (ANTU) as a Rat Poison. *J.A.M.A.*, 129:927-931 (Dec. 1), 1945.
6. Bringham, G. D. and Bengston, I. A. A Study of the Complement-Fixation and Weil-Felix Reactions in Wild Rats as Related to the Isolation of the Virus of Endemic Typhus. *Pub. Health Rep.*, 60:29-46 (Jan. 12), 1945.

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# Race Relations in Community Health Organization

PAUL B. CORNELLY, M.D., DR.P.H., F.A.P.H.A.

*Head, Department of Bacteriology, Preventive Medicine and Public Health,  
Howard University, Washington, D. C.*

THE past five years have seen a tremendous growth in interest in race relations matters. Books about the Negro and his problem, some good and some not too good, have been published in increasing numbers; hundreds of citizen interracial committees have been formed and myriads of forums and seminars on the subject have been held. Unfortunately, most of these activities have been concerned with discriminations in employment, housing, schools, and transportation, and little has been said about relationships in matters of health. Yet this is of importance if progress is to be made in eradicating some of the health problems among Negroes. During 1945, the writer, as health consultant for the National Urban League, had the opportunity to participate in a project which made possible certain observations in this sphere. This article is for the purpose of describing this project and to note some of the findings, supplemented in many instances by other observations, which may be helpful to communities which are sincere in meeting the health needs and solving the health problems of the Negro.

## DESCRIPTION OF THE PROJECT

The National Urban League, as a result of a grant from the General Education Board, beginning in 1944 formulated and developed a community relations project to be offered to cities

which either had large Negro populations or in which relations between the races were not entirely satisfactory, in order to be able to suggest ways and means whereby various aspects of the community pattern could be modified, altered, or eradicated for the good of all individuals within it. The methodology used in this project may be briefly described.

The Council of Social Agencies or Welfare of any city desiring this service makes a formal request to the National Urban League which in turn submits it to a National Advisory Committee created for the purpose and composed of representatives of a selected number of national voluntary health and welfare agencies, such as the National Tuberculosis Association, the National Recreation Association, and the National Organization for Public Health Nursing. After careful study, the National Committee either accepts or rejects this request. On acceptance of the request, the community relations staff then begins its operation. The staff consists of a director and associate director, both trained in social research methods, and five specialists or consultants representing the fields of health, social case work, recreation, and group work, housing, and industrial relations.

The director and associate director go into the community and make an overall survey of various phases of community life, with particular em-

phasis on those which are significant in race relations. This survey generally extends over a period of three to four weeks, and culminates in a report embodying specific recommendations for each of the five fields mentioned above. This report is then submitted for acceptance or rejection to the Council of Social Agencies of the city surveyed. If the findings and recommendations are accepted, either as a whole or with modification, then the five consultants move into the city and spend approximately three weeks carrying out the second phase of the project. The community is approached by each consultant, mindful of the ultimate purposes of the project, namely, to gather pertinent facts concerning the problems of Negroes and services available to them in each of their own specialties; to determine the adequacy and utilization of these services by Negroes; to make community leaders and organizations aware of the various problems involved; and, finally, to suggest possible solutions to them whereby some of these difficulties may be removed or ameliorated, more effective programs developed or existing facilities and services better used by the Negro community.

Thus it is seen that the function of each consultant is not only to supplement the findings of the initial survey but to work out procedures and suggest approaches which will be helpful to the community as a whole. Each consultant then writes a report based upon his study and activities which is also submitted to the Council of Social Agencies. The responsibility for follow-up of the project remains in the hands of the council of each community. In order to arouse interest and give community support to the venture, the Council of Social Agencies in each of the cities so far serviced has formed a local advisory committee of leaders, Negro and white, to represent the more

important facets of community life. These local advisory committees have been unusually helpful to the success of this project.

It was agreed by the National Urban League Advisory Committee that only five cities should be surveyed each year, and during the first year of the project, 1945, the request of three cities in the North and two in the South were accepted. These were located in Connecticut, Indiana, Ohio, Oklahoma, and Texas. They varied in population from 45,000 to 600,000, and the percentage of Negroes in each extended from 3 to almost 30. For the second year, 5 more cities have already been listed, located in South Carolina, Missouri, Pennsylvania, Florida, and Oklahoma, and already one of these has been completed.

The responsibility for exploration of the health section of this project has been that of the writer and he has approached each of the six cities so far investigated with the concept that the health problems of every sector of the population of any community are expressions of the health level of the total community, and therefore some idea of the health of the community must be obtained in order to relate the problems of the Negro to it. The methodology which has been used by the health consultant in each of the cities has been simple and may be briefly summarized as follows:

1. The overall initial survey made by the director and associate director was carefully studied in order to obtain a complete picture of the community, to become acquainted with some of the recommendations made, and to discover any gaps or deficiencies in the health section of the report which needed further study.

2. On arrival in the city, a conference was held with the staff members of the Council of Social Agencies and with the health subcommittee of the local advisory group in order to obtain direction about some of the major problems and to suggest the names of indi-



viduals and groups which would be helpful in the prosecution of this work.

3. Thus oriented, the health consultant then launched into a study of the health structure of the city by conferences with representatives of official and nonofficial health agencies and, wherever possible, by inspection of many of the facilities available.

4. Discussions were also held with Negro and white leaders, either in groups or as individuals, about the health problems of their community which specifically concerned them, and formulating or devising with them ways and means whereby these problems might be approached and possibly solved.

5. Before leaving the community, a verbal report was made to the full local advisory committee in order that there would be opportunity for frank discussion about the findings and solutions suggested and that definite plans could be laid for subsequent follow-up.

6. Finally a written report was sent to the Council of Social Agencies to be made available to the various groups and organizations which had been reached so that each of them would be able to study the suggestions and recommendations and continue to work along those lines which they found acceptable.

Much has been written about the numerous health problems of the Negro and the disproportions existing in his mortality rates when compared with those of the white population. All too often the specific environmental causes which contribute enormously to these high rates, such as low economic level, poor housing, low educational status, are not often mentioned. Rarely if ever is mention made of the social patterns of communities and the attitudes of health workers which stand as very definite barriers to the health progress of the Negro. In any program which aims to solve these problems, cognizance must be taken of many of these factors, some of which are rather intangible. Overcoming the tangible ones, such as establishing clinics and health centers, is rather simple, but attacking the intangible ones, such as attitudes and ways of thinking, offers greater difficulties and yet these are the barriers which often prevent full utilization by Negroes of all of the services

which are available to them. The discussions which follow deal with both tangible and intangible aspects and are based for the most part on the studies of these six cities. It is highly possible that by some singular coincidence these apply only to the cities in question; however, even if this were the case, these observations may be helpful to official and nonofficial health agencies which are attempting to face squarely and honestly some of the persistent health problems of the Negro.

#### SOME OBSERVATIONS BASED ON THE PROJECT

1. The study of the cities, North and South, showed that all of them were lacking in certain basic health programs for all of the members of the community, and in only one could it be said that there was a semblance of a well organized official health agency which planned, directed, and coördinated the health activities of the community. In one city of 120,000 population there was no full-time health officer, no public health nursing division, and little in the way of a health education program; in another with 230,000 persons, the responsibility for the health department was divided between two part-time practising physicians and the meager health services which were available were dispensed by a welter of agencies, including the state, local, and county health departments, plus a voluntary health agency and without any coördination between them. In another there were no prenatal or infant hygiene clinics because the practising physicians in the community were opposed to them. Thus it is seen that, whether black or white, members of these communities are suffering from a lack of elemental services. As would be expected, however, in all of the cities the deficiencies in services were much more acute for Negroes than for white individuals. This is more

significant when it is realized that the mortality rates for Negroes for the major group of diseases were higher than for white individuals. This applied with particular emphasis to such services as venereal disease clinics, beds for tuberculous patients, dental health services, health education activities, and services for handicapped children. Much has been said for instance about the high prevalence of venereal diseases in the Negro, and yet in three of these cities the venereal disease program was woefully inadequate, the clinic facilities dilapidated and unattractive, one of these being in an old city jail, and the treatment accorded to Negro patients not always of the highest professional type. In the largest community of this group, with 600,000 population, of whom 120,000 were Negroes, there was only one public venereal disease clinic to serve the Negro population. Another instance of a most glaring deficiency exists in one of the southern cities where sight-saving classes, schools for crippled children with free transportation, and schools for mentally retarded children are available for white individuals, but none for handicapped Negro children. It is obvious, therefore, that if the basic services are unavailable to Negroes who have many more ills, then this group is doubly penalized.

2. It is interesting to note that one of the basic principles of public health practice, namely to provide services in terms of needs rather than on a population-ratio basis, is still being violated when it comes to Negroes. This is not as overt as it was 15 or 20 years ago, but remnants of this practice whereby Negroes are allocated health facilities in terms of population percentage rather than on actual need is still to be seen. This was particularly true in the allocation of beds for tuberculosis. In one of the northern cities with an adequate number of hospital beds to care for the tuberculosis problem, Negroes made up

9 per cent of the population, and only 10 per cent of its beds for tuberculosis were allocated to Negroes, even though the Negro mortality rate was 4 times that of white individuals. In one of the southern cities with a similar differential in the rates, only 20 per cent of the beds were allocated to Negroes, since this was in keeping with the approximate percentage of this group in the population.

3. The coöperation of various portions of the population is important in advancing the health level of any community. This cannot be obtained fully if any group is continually excluded from participation in formulating policies and programs which all too often affect it. This is the case as far as the Negro is concerned in his relationship with official and nonofficial health agencies. In all of the six cities thus far surveyed, most of the voluntary health agencies lacked Negro representation on their boards and therefore they were in the position of making plans and executing programs in which Negroes were involved without the benefits of their point of view. This was true in the case of such organizations as the tuberculosis societies, visiting nurse associations, and crippled children societies. A few of the voluntary agencies attempted to meet this problem by establishing Negro advisory committees to give counsel to the boards of their organizations. This all too often was unsatisfactory because these committees only served to give assent to programs which had already been formulated and discussed by the board. In other words, the Negro committee acted primarily in the capacity of a rubber stamp. The pattern is quite similar in terms of the official health agencies.

If the health problems of the Negro are going to be successfully attacked, all health agencies must come to the realization that they must provide the opportunity for the Negro point of view

to be heard on the same basis as that of white members of the community, particularly in those localities where the Negro makes up a sizable proportion of the population.

A simple example which comes to mind and which shows the importance of having the Negro's point of view in certain matters may be seen in the matter of health literature. Many health agencies have not received the utmost in coöperation from the Negro community because in some of the letters which they have addressed to them and in some of the pamphlets which they have prepared for them, the term "Negro" wherever it has appeared, has not been capitalized. Many Negroes consider this an affront, and quite often develop an antagonistic or indifferent attitude to any agency which makes this seemingly minor error. Negro representatives will also have the additional advantage of developing a strong link with the Negro community, since members of their own race will be better able to interpret to them the activities of the organizations on which they serve. In this connection, a word of caution should be sounded. Negroes who are chosen to serve on the boards of these agencies should not be selected merely because they are conservative and easily accept the point of view of the white members of the board, but rather because they are leaders in the Negro community, face problems with objectivity and realism, and are not at all hesitant in expressing their considered opinion. In too many communities such individuals are tacitly barred from most of the agencies and labeled trouble makers.

4. The voluntary health agencies have contributed immeasurably to the health progress of this nation, but it is becoming apparent if we are to judge by recent publications, that some of their policies, programs, and attitudes are in need of examination. There

are two of these which may be noted here as they have been observed in these six cities; one applies to the community as a whole and the other specifically concerns the Negro population. In all of these communities it was noted that these agencies continue to hoard, as it were, those services and programs which they initiated many years ago but which now rightfully belong in the official agencies, and thereby they have become a hindrance in the progress of good city health administration. In two of the communities, for example, the whole tuberculosis control program was being administered by the tuberculosis societies and they were loath to relinquish these responsibilities to the health departments, although at least one of them was in a position to accept this without any deleterious effect on the existing program.

The second has to do with the attitude of voluntary agencies to the health problems of the Negro. Too many of them have established Negro divisions within their organizations, often with one Negro worker in such a unit to handle all of the phases affecting Negroes. It would appear that the time has come to employ Negroes in each of the various divisions of any health organization serving Negroes. For instance, if an agency has divisions in adult health education, rehabilitation, and medical services, it certainly would be more sound administratively to employ competent Negro staff members in each of these units than to have an additional division concerned with Negro work. Aside from its administrative soundness it would help in race relations, since it would provide greater opportunities for trained professional Negroes and thereby serve as a source of encouragement to Negro youth throughout the land. In passing, it may be said that this pattern of having a Negro division has been adhered to rather strongly by many national

voluntary and federal health agencies.

5. The opportunities for employment in health agencies, voluntary and non-voluntary, for Negro professional persons are still rather meager. The only type of Negro professionally trained persons employed with any degree of consistency in all of the six cities was the public health nurse, and even here it was not always done in numbers commensurate with the Negro case load of the agency or the Negro population of the community. This was seen particularly in the southern cities where these nurses had responsibility for the major share of work with Negroes. In one of the southern cities with 25,000 Negroes in the population, only 2 of the nurses were Negroes, while in another with 125,000 Negroes, only 6 of the nurses were colored. Thus the health education, supervision, and other services which nurses are able to give are not available to Negroes in these cities.

Other than these nursing opportunities, the health agencies offer little in the way of employment of physicians, dentists, sanitary and food inspectors, health educators, and medical social workers. Yet many public health authorities have stressed the desirability of employing Negroes wherever large numbers of this racial group are handled, since they appear to be able to establish better rapport with these patients, and thereby contribute to better case holding and improved race relations. In the consideration of this fact, three items should be emphasized.

First, the idea is not being advanced here that Negro professionals are the only ones who can treat Negroes any more than that only white professionals should handle white individuals. Obviously the training received by a Negro public health nurse at one of our major universities prepares her to care for patients of any racial group; however, cognizance must be taken of the fact

that in certain sections of the country, racial separation exists and Negroes are generally employed to care for their own.

Second, the same standards of training and experience should be used in determining the qualifications of Negroes that are used for white individuals. Last, the same salaries and similar opportunities for advancement should be provided. It is a well known fact that in the South Negro teachers receive less compensation for their services than white teachers, but this also obtains in health and welfare agencies, although not to as great an extent as in the former group. For instance, in one of the southern cities surveyed, the Negro nurse serving in the same capacity as white nurses in a voluntary health agency were receiving less pay. Unfortunately also for most Negro public health workers, is the fact that the opportunities for advancement are practically nil. This was well shown in all of the six cities visited. It is the belief of the writer that public health as a career will not attract the best of Negro physicians, dentists, and others because there is the realization on the part of these individuals that, once they accept this type of job, they are doomed to remain at the level in which they start, while they watch white persons, perhaps of less proficiency, advance to positions of responsibility and higher salaries. This is one of the important problems which will have to be faced if progress is to be made in this area.

6. The availability of hospital beds for Negroes, both general and special, is one of the more pressing problems of this racial group. In five of the six cities, two in the South and three in the North, the ratio of hospital beds to Negro population was much lower than that for whites, and generally less than the accepted standard of 5 beds per 1,000 population. The bed ratios for Negroes in each of these five cities were

3.1, 2.6, 2.5, 3.8, and 2.4. In addition, the facilities which are allocated for Negroes, particularly in the southern cities, were not equal in quality to those provided for white patients. For instance in one of the hospitals in a southern city, all of the Negro patients were placed in the basement of the hospital and, during the inspection of this institution, the writer noticed a 2 year old child with bronchopneumonia who had been admitted that day, being treated in the hallway because there were no other facilities available in the basement, although empty beds were seen in other sections. In a hospital of another city, not in this group under consideration, Negro women patients are placed in an enclosed porch where there is neither electric light nor heat.

The lack of hospital beds for special conditions is also acute as far as the Negro in these cities is concerned. This is well seen in the case of tuberculosis and maternity beds. In five of the six cities the number of beds for the care of Negroes with tuberculosis fell far below the ratio of 2 beds per death, so that there were long waiting lists with too many tuberculosis patients scattered in homes throughout the city. This is even more alarming when it is considered that Negro homes are generally overcrowded.

In one southern city, the one with 120,000 Negroes and only 24 beds for Negro tuberculous patients, not only was the number inadequate but those available left much to be desired. During the inspection trip of this hospital it was noticed that 2 Negro patients in the moderately advanced stage of the disease were smoking outside the building, although at the time, there was a downpour of rain. The lack of maternity beds is well shown in one of the northern cities where 98 per cent of the white mothers were delivered in hospitals, as compared to only 60 per

cent of the Negro mothers. Negro mothers in this industrial city would have gladly gone to hospitals if such facilities had been available. Thus we cannot talk too glibly about these important health problems of Negroes if such deficiencies in facilities for care continue to exist.

The plight of the Negro physician in relationship to the hospitals in these six cities is even greater than the deficiency in hospital beds. In all of the cities except one, Negro physicians were barred from the staffs of all of the hospitals, whether private, municipal, religious, or nonsectarian in type, and not even courtesy privileges were available to them. This practice has two very deleterious effects on the health of the community and indirectly on race relations.

First of all, Negro physicians who have patients needing hospitalization must turn their patients over to white physicians on the staff of the hospital to which they are admitted and thereby lose the opportunity to follow these cases to their termination, and in some instances, lose some of these patients to these white physicians.

Second, affiliation with a hospital provides the physician with the best opportunity for continuous professional education, since he is able to improve in skill and knowledge and keep abreast of the advances which are taking place. Thus the stultification of Negro physicians not only in these but other cities plays an important part in blocking health progress of Negroes. Negro physicians have attempted to remedy this situation by building their own private hospitals, but unfortunately in many instances these institutions are only high grade convalescent homes and lack many of the facilities, equipment, and services associated with large modern hospitals.

7. Negro physicians in the North are able to belong to the county and state

medical societies and therefore become members of the American Medical Association. In the South, including the District of Columbia, this is not possible and so about 2,000 Negro doctors in this area are barred from the scientific seminars, lectures, and clinics which are sponsored by these societies. This source of professional advancement, as in the case of hospitals, is denied them. The Negro physician who wants to keep up must journey either to the North or to short postgraduate institutes which have been developed in some of the Negro hospitals in the South, or which have been sponsored by the National Tuberculosis Association through their state and local branches. A similar situation incidentally obtains in the case of Negro dentists.

8. The attitude of white health officials and health workers in their relationship with Negroes and their health problems as observed in these cities was of much interest. First of all, it was noted that in many of the public health clinics Negro patients were often treated with condescension, lack of sympathy, without respect and dignity, and without attention to many of the minor details for personal comfort and privacy which are so conducive for developing interest and concern about their condition and which is so much needed by those attending such clinics. Second, a number of public health workers had the attitude that Negroes can get along with less than white individuals, and therefore can use to advantage what has been found to be inadequate for the white community. Third, a few health administrators were afraid to face whatever suggestions Negroes had to offer, even though based on sound administrative practice, because they did not want to effect changes too quickly and were content to move on at a snail's pace. These attitudes which belong in the realm of the intangibles are just

as inimical to the health problems of the Negroes as those which can be measured by definite standards and yardsticks.

#### CONCLUSIONS

These observations are presented in the hope that they may be helpful to health agencies which are sincerely interested in improving the health of the Negro. Many times these agencies have continued to carry their program in a set and stereotyped manner, believing that they are achieving results because they can point to statistical summaries of many meetings held, literature distributed, and injections given. Often they have not stopped long enough to evaluate their activities in terms of the groups which they are serving. This is done quite often without malice or forethought, but rather because it is easier to follow accepted channels, and public acclaim is fuller when its thinking and the pattern of action are least disturbed. Yet many health workers are desirous of finding a better way. It is commendatory to note that most of the health workers in the cities surveyed with whom the writer had contacts discussed these problems frankly, were desirous of formulating plans to overcome them and already some have reported definite progress. In the city in Indiana, the president of the county medical society has discussed with the board of directors the possibility of admitting Negro physicians to the scientific sessions of the society. In the city of Oklahoma, the voluntary health agency has already set aside funds for the employment of a Negro health educator and two Negroes have been appointed to its Board of Directors, while the superintendent of one of the private hospitals has already begun discussions with members of the Negro medical society concerning their admission to the staff of his institution. In the city in Texas, the salary of Negro nurses

in the visiting nurse association has been increased to the level of that of white nurses. These are not by any measure startling accomplishments, but changes do not take place overnight and, even if this were possible, it might

not always be desirable. Yet they are steps in the desired direction in race relations, and gains will continue to accrue if a flexibility in attitude and manner of thinking and a desire to achieve continue to prevail.

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## The Use of Color in Industrial Safety

At the request of the War Department, the American Standards Association prepared the *American War Standards Safety Color Code for the Marking of Physical Hazards and the Identification of Certain Equipment*, which was approved by the Association in July, 1945. The purpose of the standard is to establish the use of specific colors for marking certain pieces of equipment and parts of buildings with identifying colors in an effort to reduce injuries. At present, red is used to identify (a) fire protection equipment and apparatus, (b) danger, and (c) stop.

Yellow is used for caution and a marking of physical hazards. Green is used to designate safety and the location of first aid equipment. Black and

white or a combination of these two are used for housekeeping and for traffic markings. The experience of the U. S. War Department in using such identification paints indicates a promising place for such procedures in the reduction of industrial accidents. Safety records of 26 Quartermaster Corps and Army Service Depots show that certain types of accidents were reduced from a frequency of 46.14 to a yearly average of 5.58, while others were entirely eliminated after the standard colors were put into effect. One Depot estimated that during the first year after adoption of the code, disabling injuries were cut from 13.25 to 6.99 per each one million man hours worked.—*Industrial Standardization*, July, 1946, American Standards Association.

# Health Education Program in Puerto Rico

ALICE MILLER JOHNSON, F.A.P.H.A.

*Sanitarian (R), Health Education Consultant, U. S. Public Health Service,  
District No. 6, San Juan, Puerto Rico*

PUERTO RICO is a very beautiful Island in the Caribbean which has much the same problems as are found in the southern part of the Continental United States. However, the situation here is more acute because it is aggravated by density of population, monoculture, and poor economic resources with all of the concomitant problems. Really to learn about the Island, one must live here as a member of the community for a sufficient length of time to appreciate this land of contrast—so beautiful yet so marred by human tragedy.

## THE PROBLEM UNFOLDS

In January, 1944, a health education consultant was assigned to the U. S. Public Health Service, District No. 6, which includes Puerto Rico and the Virgin Islands. During an intensive study of all health education activities being carried on by the various agencies on the Island, it became apparent that there was great need for an overall plan to embrace the chief agencies whose programs carry the responsibility for health education. By providing such a program, long-term planning could be done through coordinated effort, and a better understanding could be secured of all available resources.

While this intensive study was being made, the health education consultant became acquainted with the personnel in the federal, insular, and unofficial agencies, and observed their programs

and grew more familiar with the problems affecting the people of Puerto Rico. It became evident that certain conditions prevailed which should be taken into consideration in developing a plan. The Insular Departments of Health and Education each make their own policies, control the budgets, and supervise their own local programs. There are very few unofficial agencies which carry on an educational program. An Island-wide program for health education would have to be geared to the limits of the Insular budgets for the above named departments. The interests of other agencies, therefore, in addition to the Departments of Health and Education, should be enlisted so that they, too, might become participants in an Island-wide program while at the same time they would be enriching their own services. All agreed that a pressing need existed for a long-term health education program geared to reach the Island's two millions.

## HOW THE PROGRAM EVOLVED

In 1942 there was organized a Joint School Health Committee composed of members from the Departments of Health and Education, which met regularly to discuss the many problems arising during the development of school health programs. Out of these meetings, there came the recommendation that more functional school health policies be developed. Finally by the early part of 1945 the tentative school health



policies were completed by a small working committee and were approved by both departments. These policies then were ready to be used as a pattern by the local communities in developing their own policies.

During the summer of 1944, a workshop was held under the auspices of the War Emergency Program, Nursery School Division, and the University of Puerto Rico, for about sixty nursery school teachers from all over the Island. Much preliminary planning was done to make health education functional throughout the program. Already many improvements have resulted from this workshop. Concurrently, there was offered a series of ten public health lectures based on the leading health problems of Puerto Rico. These lectures were given under the auspices of the Student Service Board of the University of Puerto Rico and were sponsored jointly by the Insular Department of Health and the U. S. Public Health Service.

Then, an opportunity came for the consultant to serve as visiting professor of health education at the School of Tropical Medicine, Department of Hygiene. Here health officers, public health nurses, sanitary engineers, sanitary inspectors, and laboratory technicians are enrolled. Most of these persons will be employed by the Department of Health which is financing their training through fellowships. Therefore, it was essential to make their pre-service health education functional as well as to imbue them with the philosophy of joint planning; teamwork in carrying out plans; and of evaluating the programs continuously. The Puerto Rico School Health Policies were introduced into the curriculum for the first time.

Additional progress was made when a Health Education Section was organized in the Puerto Rico Public Health Association and, after its second year,

became a permanent section of the Association.

#### BIRTH OF A PLAN

As an outgrowth of all of these activities, a request came to serve as health education consultant to the Insular Department of Health, the Insular Department of Education, and The University of Puerto Rico. These three agencies felt the need for further development of their health education programs then in operation. In the Department of Health, there was an Office of Health Education with a chief under whose direction a silk screen artist worked; in the Department of Education, there was only one supervisor of health education for the entire Island; while the University of Puerto Rico did not have a health education program, *per se*.

After much individual consultation with those in charge of these programs and with their administrators, it was decided that an overall plan should be developed to meet the problem. A small representative committee was appointed to develop the long-term plan. It was to be based upon the needs and available resources in Puerto Rico, geared to the *modus operandi* of all three agencies, with the intent to include other agencies as the plan expanded.

#### THE TEN YEAR PLAN

The special committee appointed to draw up the long-term plan agreed upon the following points: To

1. Start with a ten year plan so that subsequent planning could be projected from the tenth year into the future.

2. Incorporate in the plan all agencies whose programs bear responsibility for health education.

3. Provide for a coordinating committee with members from all participating agencies and institutions so that overall planning can be accomplished.

4. Determine the administrative set-up for the programs of all agencies.

5. Work out job analyses for the health educators to be employed by all agencies.

6. Assist the agencies in planning budgets to include the following items: training and salaries for health educators, secretaries, and others as needed; equipment; visual aids; books; printing; supplies; maintenance; and other operating expenses.

7. Determine the standards and procedures for recruitment of all trainees who will become health educators.

8. Establish in The University of Puerto Rico a training program, both on the undergraduate and graduate level, of health educators for all types of positions, after the Island-wide program has become firmly established.

9. Begin the program based on the ten year plan only after full administrative support has been guaranteed by the agencies concerned and by the Government of Puerto Rico.

10. Provide for continuous evaluation of the programs of health education in all agencies and revise these programs in the light of findings.

After the committee had worked out the plan tentatively, it was presented to the District staff of the U. S. Public Health Service for consideration and individual study prior to a general staff meeting. The plan was approved and given full support by individual consultants in their subsequent working contacts with all agencies. As a result of thorough understanding of the plan, there was less conflicting and diverse advice given by various consultants whose programs involve health education, and the staff of the District Office gained through their teamwork.

As the next step, the plan was submitted to representative members of the Departments of Health and Education and the University of Puerto Rico for study. Final acceptance was given by each agency which directed the committee to put the plan into action.

#### PRELIMINARY STEPS FOR ACTION

Conferences were held with special agencies to interpret the Ten Year Plan for Health Education. It was necessary for these agencies to comprehend the philosophy and scope of the plan and their relationship to it,

not only because of the need for future participation, but also because some of their employees would probably become candidates for the health education fellowships. The problem offered by recruitment of personnel for any new program is a serious one on the Island as the number of qualified persons is relatively small and the well established programs usually suffer a loss of personnel to the new programs. However, it was hoped that those in administrative positions in the agencies affected could take the long-term viewpoint and be reconciled to any loss of personnel through the hope of enrichment and additional assistance to their own programs upon the return of the health educators.

#### THE PLAN IN ACTION

##### THE DEPARTMENT OF HEALTH

Work was begun first with the Insular Department of Health. In its annual plan, provision was made for a complete reorganization of the Office of Health Education so that it came under the administrative direction of the Division of Public Health rather than under the Commissioner's Office as heretofore. The Division of Public Health is one of the three main divisions in the department; the other two being, the Division of Public Welfare and the Division of Hospitals. Based upon the conditions prevailing and according to the requirements set up in the plan, it was decided that during the first ten years five or more health educators would be trained each year, so that the positions to be established in the Office of Health Education, in the five Public Health Administrative Districts, and in the Public Health Units in the towns in the districts, could be filled. In this way the health education programs could be administered, at the Insular level and at the local level, effectively. A map of Puerto Rico was used in planning the distribution of the health educators

so that each would not have to be concerned with a population of more than 40,000. The towns in each District were grouped according to carefully considered criteria.

A well organized recruitment program was started and personal interviews were given to all who were selected from the total number applying. A committee of three representing the Insular Department of Health, the P. R. Civil Service Commission, and the U. S. Public Health Service was responsible for the selection of trainees. The educational qualifications for health educators as established by the Committee on Professional Education of the American Public Health Association were used as a basis for interpretation to the applicants to be interviewed so that they would have some idea of the type of program they would develop upon their return. A tentative salary scale was set up and discussed as were the possible places of assignment. An earnest effort was made to select trainees who had the type of personality for the work and a real desire to perform the duties of a health educator. Before final notification was given, the efficiency rating of those chosen was discussed in conferences with their employers.

Six trainees were sent to the University of North Carolina on fellowships from grant-in-aid funds in the fall of 1944, and an additional trainee was sent in June, 1945. In the fall of 1945, six more trainees were sent to the same university.

During the first year that the trainees were away, considerable work was done to set up job descriptions for the positions to be filled by the Department of Health. This effort was carried on by the Department of Health, the P. R. Civil Service Commission, and the U. S. Public Health Service. Final acceptance was given by the Commission in 1945. Classifications were worked out for

Health Education Supervisor, Health Education Editor, Visual Aids Specialist, Senior Health Educator, and Health Educator.

Then, in the fall of 1945, six of the trainees returned with Master of Science Degrees in Public Health with a major in Health Education. These health educators took the civil service examinations and as soon as they were certified by the P. R. Civil Service Commission, they were assigned to their respective positions. The Health Education Supervisor and the Health Education Editor are working in the Office of Health Education with the silk screen artist already on the staff. The four senior health educators are assigned to four of the five administrative public health districts. These districts center around the cities of San Juan, Arecibo, Ponce, Mayaguez, and Caguas. The fifth district will wait for its health educator to be selected from those returning in the next group. As additional persons are trained, they will be certified as health educators to work in the public health units in other towns in the districts under the guidance of the Senior Health Educators. The latter are working closely with the personnel at the Insular level to initiate the intensive community health education programs.

Before the health educators arrived, a meeting of the five District Medical Supervisors was called by the Director of the Division of Public Health to discuss the Island-wide Health Education Program, and particularly the work of the Senior Health Educator according to the Civil Service Commission's job analysis. Then, when the Senior Health Educators arrived and were assigned to their districts, conferences were held in the public health unit to which assignment was made. The group included the District Medical Supervisor, the Medical Officer, the Health Education Supervisor, the Health Education Consultant of the U. S. Public

Health Service, the Director of School Hygiene of the Bureau of Maternal and Infant Hygiene, and the Senior Health Educator. These meetings were of vital importance in the inauguration of the new program. Instead of beginning programs throughout the district at one time, the Senior Health Educator has been loaned to the public health unit in one of the towns in the district. The work is developing first in the neighborhood area around the experimental school selected by the Department of Education in which to develop a functional school health program through the joint participation of both departments. From this neighborhood area, the program will spread to encompass the entire town. Later, as more Health Educators are at work in the Island, the Senior Health Educator will assume her duties at the district level.

Movie machines, films, slide projectors, mimeograph machines, mimeoscopes and books, are among the most important items already bought for the districts to be used in the local programs.

An advisory council was organized by the Office of Health Education. It consists of the chiefs of all the bureaus in the Division of Public Health and any other representatives they wish to include, plus representatives from the other two divisions in the department of health. This council meets monthly at the time that the health educators and field technicians come in for conferences so they can attend these meetings also. The council was organized for several purposes:

To interpret to the members of all bureaus the programs which the health educators are developing and to show how the programs of the special bureaus can be included in the total community health education programs.

To have each bureau responsible for one monthly meeting so that its pro-

gram can be discussed and shared with all other bureaus and divisions.

To devise ways for more joint planning and more joint participation, and for inclusion of representatives from other insular and federal agencies.

To secure the advice of the council members on health education matters.

#### THE DEPARTMENT OF EDUCATION

The Department of Education subscribed to the principles of the Ten Year Plan and recruited five well qualified persons according to the same criteria used by the Department of Health. It was decided to place these five health educators, upon their return, in the school systems of the same five towns with the Senior Health Educators of the Department of Health. Thus, the two can work as a team since the problem of health education in the schools necessitates the full time of a health educator who can plan with the community health educator to make the school health program an integral part of the total community program. The salary scales and titles were worked out in conformity to Department of Education regulations and are compatible with the standards set up by the Department of Health. A committee of three worked up a job analysis for the position of field technician in health education. All applicants for fellowships were interviewed personally, at which time an interpretation of their work was made according to this job analysis.

In the fall of 1944, these five trainees were sent to the University of Michigan for training on fellowships jointly financed by the Departments of Health and Education, and have returned with Master's degrees in Public Health. Before their return, a meeting was held at the Department of Education with the superintendents of schools in the five towns where the field technicians were to be assigned. This meeting had

the same purposes as that held by the Department of Health.

The programs have been started in an experimental school in each town through joint planning of staffs of the school, the public health unit, and others, as needed. The Puerto Rico School Health Policies are being adapted to use the available scientific personnel in the community in relation to local situations and resources.

The in-service training in these experimental schools is centered in a course affiliated with the University of Puerto Rico, so that those who have registered in the course for credit will receive two semester hours credit upon its successful completion. The total faculty in each experimental school is participating. All health educators and field technicians met several times with the health educators at the university before the course began, to go over their syllabuses and to agree on general principles. In this way the two programs, pre-service and in-service, are being enriched from the ideas and experiences of all. Subsequent meetings will be held during this term.

By the opening of schools in September, 1946, it is hoped that the school health program can be started in each experimental school with all personnel adequately prepared. Continuous guidance will be given to the experimental school during the year. Additional schools will be added to the experimental program in each of the five towns so that the personnel can be given the accredited course in health education before the school health program is initiated. Thus, the plan will proceed until all schools in the town will have been reached. Constant improvement should result from this type of locally supervised program.

The health educators are working with those in charge of school lunchrooms throughout the Island both at the insular and local levels. The lunch-

rooms are being considered an integral part of the total school health program, and food handling courses for school lunchroom personnel in the experimental schools are being conducted.

In the fall of 1945, five more trainees were sent to the University of Michigan where they are at the present time. An advisory committee has been organized for the Department of Education also and has had one meeting. This committee is made up of representatives from the various departments involved in the program. Its objectives are similar to those of the advisory committee of the Department of Health. All health educators of all participating agencies attend both advisory council meetings.

#### THE UNIVERSITY OF PUERTO RICO

The University of Puerto Rico set up two positions in health education. One position is for a health education coordinator who will not only be responsible for pre-service health education in all of its phases, but also for integration of the program throughout the total university curriculum. The second position is that of a health educator on the Board of Student Services where a closer working relationship can be developed between student services of all types, where individual health guidance can be given students relating to the follow-up of medical and dental services, and where the students' problems of housing, recreation, and nutrition can be attacked through joint planning. The university sent two carefully selected trainees to the States for graduate study on university fellowships and plans to extend the health education program as rapidly as possible. In line with the expansion, additional trainees will be awarded fellowships for graduate study in health education.

Progress has already been made toward integrating health education in

the different departments through faculty planning. There are about 300 student-teachers enrolled in the pre-service courses in health education in the College of Education, and about 100 teachers enrolled in the in-service courses being given in the experimental schools in the districts. The work has started in individual health guidance for students and they themselves have asked for a student health committee which is already at work. Many more demands are coming for assistance in health education than the two health educators can meet.

#### THE SCHOOL OF TROPICAL MEDICINE

The School of Tropical Medicine became the next participant in the plan. A job analysis was made so that a broad health education program could be developed in line with that which has been evolving in this school. A fellowship in health education was awarded to Puerto Rico in 1945 by the National Foundation for Infantile Paralysis. A trainee was recruited for this award, and is now studying in the University of North Carolina. Another trainee will be sent by the School in the fall of 1946.

#### OTHER AGENCIES AND INSTITUTIONS

The Polytechnic Institute of Puerto Rico, a private Christian educational institution, set up a plan for including a health educator on its staff. This person was selected and is at present studying health education at the University of North Carolina.

The Farm Security Administration came into the plan next. Another fellowship from the National Foundation for Infantile Paralysis was awarded to Puerto Rico and was given to the person recruited for a position to be set up in the Regional Office of Farm Security Administration. This person is studying at the University of North Carolina, also.

The next agency to participate in the developing plan was the Agricultural Extension Division which sent one of its own personnel to the States for graduate study in health education. She has returned and is serving as health education specialist for the staff and field personnel of the Extension Division.

#### THE ISLAND-WIDE COÖRDINATING COMMITTEE

The ten year plan calls for a co-ordinating committee to be made up of health education representatives from all participating agencies so that joint planning can be done through regular monthly meetings. A chairman who will serve for one year and a vice-chairman have been elected. The vice-chairman will fill the chairman's place at the end of the year. Through these meetings, plans for health education to be carried out by all the agencies are so well coördinated that the programs have unity and an overall strategy. Also through this coördinating committee, ideas and experiences can be exchanged, new materials can be brought to the attention of all, and duplication of effort eliminated. This committee will serve as a clearing house for any outside requests that may give an opportunity for planning broad programs jointly. The meetings are planned for the same time as those of the advisory councils and those of the health educators. This results in only one trip for the field workers.

Since the Island-wide coördinating committee is at the present time made up of all the health educators, sub-committees have been established to develop materials on the main health problems. The Health Education Editor of the Office of Health Education is serving as the key person to correlate this work.

Before materials are mimeographed or printed, they are checked by the

Research Division at the University of Puerto Rico to make certain that they are adapted to their purposes. Since over 60 per cent of the population of Puerto Rico has had only about one and a half years of schooling, this is a most important aspect of the work of this committee. Three simple Spanish pamphlets have been completed to date and will be tried out in the five experimental centers before they are printed for Island-wide distribution. All agencies are privileged to use the same pamphlet and will bear the expense of printing the quantity they require.

All materials being prepared for teachers' and pupils' use are being worked out in collaboration with the respective curriculum committees of the Department of Education.

#### FUTURE STEPS IN THE PLAN

Two other agencies have made plans for assigning health educators to their staffs. The P. R. Department of Labor is going to add a health educator to the staff of its Bureau of Publications and Workers Education. The P. R. Housing Authority is going to attach a health educator to its central staff and will add others as quickly as their housing projects are completed.

Trainees will be recruited and educated on fellowships to become health educators for the two positions mentioned above as well as to fill the yearly quotas for the Departments of Health and Education. It is planned that fifteen more Puerto Ricans will be sent to the States in the fall of 1946.

In accordance with the plan, progress is being made in evolving a program for training future health educators in Puerto Rico. It is believed that after the Island-wide program has been in operation for about four years, this training can be initiated. The School of Tropical Medicine through its Department of Hygiene will grant graduate degrees in public health with a

major in health education. A curriculum will be set up based upon the job analyses for all types of health educators needed, and active participation will be given by the University of Puerto Rico and all other agencies active in the Island-wide health education program. There are sufficient qualified faculty members in both institutions together with professional persons on the Island to give the basic scientific and academic preparation needed. Then, in the local public health units, there will be health educators who have assisted in the development of community health education programs to give the supervision for field work in this area. In each of these same communities there will be field technicians in health education who can give the necessary supervision in the area of school health. Field experience can be enriched by the work of all agencies on the Island. By having the entire training program planned through group participation in the Coördinating Committee, the trainees should be able to get twelve months of very excellent postgraduate academic and field work that has unity and cohesion. This plan will have an added advantage because the work will be based upon problems the trainees will face when they go into their own positions. From a practical standpoint, the field training will be orientation for their future positions. Also there will not be the acute problem of adapting Continental standards and problem solutions to situations which are very different here in Puerto Rico. Because the cost of training future health educators will have to be carried by insular agencies, the expense is an item to be considered also. Training health educators here will cost considerably less, so that more teachers and personnel of other agencies can study health education either by working toward a graduate degree or by taking special courses offered in the

curriculum which would help them to perform their work more intelligently.

#### EVALUATION

The evaluation of this program is being carried on continuously in all advisory council meetings, conferences for health educators, and coördinating committee meetings. By this means the growth of the program can be assured.

By the fall of 1946, there will be twenty-eight health educators with graduate degrees working throughout the Island. Upon this group rests the responsibility for laying a firm foundation for the work of those who join the ranks in the future. Only because of the broad vision of the Department of Health in taking the leadership in

initiating such a far reaching program, and the farsightedness of the other agencies and institutions in sharing in it, could so much have been accomplished in less than three years. Progress was made possible because of the excellent coöperation of the individuals in these agencies to whom the credit really belongs. The blueprint was carefully drawn, the foundation has been laid, and the structure is being built through the sincere and wholehearted effort of all. Future progress is contingent upon the full support of administrators in the participating organizations and the Government of Puerto Rico. It is hoped that through the Island-wide Health Education Program, more health and happiness can be brought to the people of this beautiful island in the Caribbean.

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## Conference on Blood Programs

The U. S. Public Health Service, in coöperation with the Conference of State and Provincial Public Health Laboratory Directors, has called a Conference on Blood Programs to be held in Washington September 16-18. The Conference will cover the numerous problems connected with blood programs and will summarize the recent experience in the past.

Laboratory directors who are now carrying on blood programs or plan to

launch them in the near future are being invited.

Dr. Roy F. Feemster, Chairman of the Conference of Laboratory Directors and Director of the Division of Communicable Diseases of the Massachusetts State Department of Health, asks that suggestions for subjects to be discussed or papers to be contributed be referred to Dr. G. F. Meadors, States Relations Division, U. S. Public Health Service, Bethesda, Md.



# Modern Treatment of Syphilis\*

EVAN W. THOMAS, M.D.

*Rapid Treatment Center, Bellevue Hospital, New York, N. Y.*

THE modern treatment of syphilis is still in the experimental stage and only a very rash or ignorant prophet would presume to declare at this time what the best treatment will prove to be within the next few years. The first great innovation in the treatment of syphilis since the introduction of arsenical drugs by Ehrlich occurred less than a decade ago when Hyman, Chargin, and Leifer<sup>1</sup> introduced the rapid treatment of early syphilis by a continuous intravenous drip. Modifications of the somewhat troublesome technique of the intravenous drip followed rapidly, but no method of quick therapy with arsenical drugs is without its dangers.

At Bellevue Hospital we found that serious arsenical reactions could be reduced to a minimum by combining mapharsen with bismuth and fevers induced by typhoid vaccine.<sup>2</sup> The addition of fever made it possible to cut in half the total dosage of mapharsen necessary for fairly adequate therapy of early syphilis when fevers were omitted. Prior to the introduction of penicillin, a single daily injection of about 1 mg. of mapharsen per kg. of body weight for 10 days combined with four fevers induced by typhoid vaccine and three injections of 0.2 gm. bismuth salicylate in oil, proved the most satisfactory rapid treatment of early syphilis in our experience at Bellevue Hospital. After numerous trials with other methods of massive arsenotherapy, the

combination of mapharsen, fevers, and bismuth became an established routine with us. Several thousand patients with early syphilis were so treated with a far lower percentage of serious reactions than with any other method of rapid treatment with arsenotherapy. Nevertheless, we had 2 deaths attributable to this plan of therapy and we lived in constant fear of occasional serious reactions.

Apart from the threat of arsenical reactions which were reduced to a minimum in a 10 day treatment, such statistics as have been published by the U. S. Public Health Service<sup>3</sup> indicated that the treatment with mapharsen, fever, and bismuth gave the best therapeutic results in the follow-up of rapidly treated patients reported to its central tabulating agency prior to penicillin. In spite of its risk, the advantages of this therapy for the more or less irresponsible type of clinic patient far outweighed its disadvantages, and there is no question in my mind that everyone interested in the treatment of syphilis owes a debt of gratitude to the men who were responsible for introducing a quick method of therapy and to the New York City Committee appointed by former Commissioner of Health Rice for its further investigation.

The introduction of the intravenous drip for massive arsenotherapy paved the way for further developments of rapid treatment and permitted the accumulation of knowledge without which the prompt inauguration of penicillin therapy would have been greatly handi-

\* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 14, 1945.

capped. First of all, massive arsenotherapy, in spite of its potential dangers, showed that early syphilis could be treated more satisfactorily in a relatively brief period than over a period of many months. This statement has been challenged and probably will still be challenged by some. But when one considers that in the clinics throughout the United States not more than 10 per cent of the patients with early syphilis completed the recommended therapy, and that the Cooperative Clinics<sup>4</sup> reported in 1929 that 43 per cent of patients with primary and secondary syphilis who had irregular treatment over a period of 9 months developed infectious relapses, the value of rapid therapy cannot be questioned. Nor is there any evidence that patients who achieve negative serologic tests following rapid therapy and who remain sero-negative over a period of 2 years are more prone to relapse than patients who received 2 years of the older conventional courses of treatment. Such patients may be reinfected, but there is little evidence that a significant number relapse or go on to develop the more serious lesions of late syphilis if they are sero-negative 2 years after treatment. This does not mean that we can afford to neglect the possibilities of later developments. Every effort is being made at Bellevue Hospital to keep patients who are given rapid treatment for early syphilis under observation for life, if possible. This is manifestly an impossible ideal to attain for the majority of clinic patients, but we are still following at Bellevue Hospital several hundred cases treated more than 4 years ago.

In addition to establishing the practical possibility of treating syphilis rapidly, the introduction of rapid methods of therapy added greatly to our knowledge of what to expect after such therapy. It required the introduction of rapid therapy to awaken clini-

cians to the importance of quantitative serologic tests for syphilis. I lack the time to discuss the many reasons why quantitative serologic tests are an invaluable aid in the management of syphilis, but I assure you that I no longer consider it possible to treat syphilis properly without the aid of such tests. The fact that they are not more readily available to physicians is a great handicap and should be remedied. My own knowledge of syphilis in all stages has been increased greatly by the use of such tests. I now consider them as essential in the treatment and follow-up of patients treated for late syphilis as for early syphilis. I think time will prove that all stages of syphilis can be treated rapidly more effectively than by the older conventional plans of weekly injections, but we must have quantitative serologic tests if we are to accumulate adequate evidence for this. I have found that the study of quantitative serologic tests for syphilis in large groups of patients, followed up for years, affords invaluable information and also stimulates one to greater thought because it raises questions which have been previously recognized but forgotten by most busy practitioners.

Thus the experience with massive arsenotherapy and the introduction of routine quantitative serologic tests for syphilis afforded an essential background to the rapid development of the use of penicillin. The fact that the Public Health Service promptly seized the opportunity of aiding controlled experiments with rapid therapy, prior to the introduction of penicillin; served to hasten the accumulation of knowledge both as to its dangers and therapeutic efficacy, and, most important of all, it prepared the way for introducing a relatively non-toxic drug which could at once be put to effective use in the war emergency. Within a few months following Dr. John Mahoney's discovery of the spirocheticidal action

of penicillin in early syphilis and his apparently successful treatment of a few cases, controlled experiments on a large scale were under way under the sponsorship of the National Research Council. Owing to the background of previous experience with rapid treatment, penicillin could be introduced by the armed services much sooner than would otherwise have been possible.

As one who recognizes the dangers of bureaucratic control over the practice of medicine, I doubt if anyone can honestly question the outstanding contribution of the public health authorities to the recent advancement in the treatment of syphilis. It was the New York City Department of Health which first made it possible to investigate the discoveries of Chargin, Leifer, and Hyman at Mt. Sinai Hospital with respect to massive arsenotherapy. This investigation was conducted under controlled conditions, under the supervision of a committee of physicians appointed by Commissioner Rice. It was the U. S. Public Health Service which fostered the further development of rapid treatment and made it possible to collect the necessary data as to its dangers and effectiveness. It was Dr. John Mahoney, a Senior Surgeon in the U. S. Public Health Service, who, on his own initiative, discovered the effectiveness of penicillin in treating syphilis at a time when penicillin was so scarce that he had to make his own product in order to carry on the investigation. It was the National Research Council, through its Subcommittee on Venereal Diseases, which at once began to exploit and develop Dr. Mahoney's discovery by carrying on investigations through the coöperative efforts of some twenty different clinics and institutions. In this investigation the Public Health Service rendered valuable aid and, in January, 1946, it replaced the Office of Scientific Research and Development as the sponsor for carrying on future

investigations. These are contributions of the highest order in the fight against syphilis.

In any large scale development of a new treatment which has to be supported by public funds there is always the temptation to neglect the quality of work for the sake of quantity. This, to a certain extent, is inevitable in the rapid treatment of early syphilis where large numbers of poor and frequently irresponsible individuals must be cared for. The treatment can be given as outlined, but the long range investigation of the results of treatment is extraordinarily difficult. This is especially true in a time when syphilis is on the increase. It was to be expected that total war involving most of the world would increase the incidence of syphilis many fold. In large areas of Europe and Asia this has undoubtedly happened. America was fortunate in escaping the disastrous effects of war waged on its own soil. Nevertheless, the incidence of infectious syphilis has mounted steadily in the United States during the past year and it would unquestionably have risen far higher had it not been for the efforts of the public health agencies. Confronted with an emergency such as the war, it was essential that every case of infectious syphilis be treated as rapidly and effectively as possible. Ideally, every such case should be followed up for years after treatment, and careful records should be kept on each case. Practically, such a nation-wide program was impossible, regardless of how many directives were issued urging that it be done. The first essential was to find as many infectious cases as possible and treat *them* promptly. Owing to the availability of rapid therapy, this has been done, both in the armed forces of the United States and in the civilian population, as never before. Without this therapy the future would be much blacker than it is so far as syphilis is concerned.

Nevertheless, as previously stated, the modern treatment of syphilis is still in the experimental stage. This means that the quality of investigation must be kept at the highest possible peak in at least some centers. It is vastly more practical to choose a relatively few stations for this intensive investigation than to spread the clinical research so thin that authoritative knowledge will never be available. The entire medical profession, and hence the public, will gain by thorough, carefully controlled, long-range research which is carried on intensively in a relatively few places. The results of these carefully controlled studies can be made available to all. To the credit of the Public Health Service this fact has been recognized and, in taking over the sponsorship of future investigation, formerly conducted under contracts with the Office of Scientific Research and Development, there is every reason to believe that the Public Health Service will not overlook the need for the highest possible quality of research. Mass treatment and thorough research can both be carried on but not in every treatment center. It is important that this be kept in mind or quality will inevitably be sacrificed for quantity. There is still much to be learned about treating syphilis with penicillin which cannot be determined by mass treatment alone.

The dosage of penicillin required for apparently good results in early syphilis has been fairly well investigated, but the number of days during which treatment should be given for the best results is still an unknown factor. We now know that in early syphilis aqueous penicillin should be given every 3 hours for at least 60 doses, over a period of  $7\frac{1}{2}$  days. The same total dosage when divided into 30 doses, each injection being given every 6 hours, will not be as effective as when given every 3 hours. But no one knows what would be the effect of giving relatively large doses of

penicillin every 6 hours for a period of 15 or 20 days. Perhaps that would be as effective as more frequent injections given over a shorter period. In other words the time factor in the treatment of syphilis with penicillin still requires a great deal of investigation.

At Bellevue Hospital we have learned that the time factor is of considerable importance in treating neurosyphilis with penicillin. Treatment must be conducted over a considerably longer time than in early syphilis. We are now giving 40,000 units of aqueous penicillin every 3 hours for 150 doses to patients with neurosyphilis. This requires almost 19 days but it has proved more effective than when patients were treated in 10 to 14 days. As devices for slowing the absorption of penicillin are worked out, it may well be that penicillin can be given to ambulatory patients, and possibly we may find that, like arsenical drugs, if treatment is extended over a long enough period, less frequent injections will be as effective as more frequent ones given over a brief period. This possibility, however, does not excuse the physician who today persuades syphilitic patients to take penicillin once or twice a week in his office. With the knowledge now available, that kind of treatment is inexcusable quackery.

As long as patients have to be hospitalized for treatment with penicillin, it is economically important to shorten the period of treatment to as few days as possible. So far, the  $7\frac{1}{2}$  day period seems to be the minimum necessary for reasonably satisfactory results. In that period of time the best results in our service at Bellevue Hospital have been attained with 20,000 units of penicillin dissolved in water, injected every 3 hours for 60 doses, combined with 8 daily injections of 0.04 gm. mapharsen. At present we are investigating the use of penicillin in beeswax and peanut oil by giving daily injections of 600,000

units a day for 8 days. So far this treatment has been well tolerated, except for a few reactions of severe urticaria associated in two cases with fever lasting for several days. The quantitative serologic tests of patients treated with penicillin in beeswax and oil have been coming down satisfactorily, but the investigation of this therapy was started too recently to compare it as yet with other regimens.

Without going into more detail, it can be said in general that penicillin has proved a tremendous boon in the treatment of syphilis during the war emergency. While penicillin is no panacea, and some patients who have received it for early syphilis are certainly going to develop the late manifestations of the disease because of their failure to keep under observation, one cannot stress too greatly the advance that this new weapon represents in the struggle against *Spirochæta pallida*. Only those who have been on the alert against the dangers of massive arsenotherapy can appreciate fully the advantages of a relatively non-toxic, yet effective drug for use in rapid treatment.

But in spite of this new aid to the treatment of syphilis, and in spite of any new treatment that may still be discovered, syphilis is not likely to be controlled through effective treatment alone. It is becoming more evident every day that the dream of eradicating syphilis in a generation is a pipe dream, and little more than a pious hope, if we are dependent entirely upon effective methods of therapy. A continued program of educating the public is imperative. No disease yet has been controlled entirely by treatment, and syphilis is far more complex and difficult to eradicate than most infectious diseases. Both the psychological and social factors which favor promiscuity

and poor sexual hygiene require investigation if we are to get at the roots of the spread of syphilis. It is obvious that poverty and individual carelessness or irresponsibility are important factors in preventing the lowering of the reservoir of infectious syphilis. But there are undoubtedly less obvious factors at work than those which are now so well known, and the time has come when a more profound study of the epidemiology of syphilis is needed than the mere tracing of sources and contacts of infection.

Further research in the immunology of syphilis is also needed, both for our understanding of the disease and for its more effective control. The need for this has been lost sight of recently in the excitement over newer methods of treatment, but some investigators will have to return to this obscure and difficult problem. These are a few of the tasks which lie ahead in the program for the future control of syphilis. They will require the sponsorship and help of public health agencies for years to come. It would be a mistake for anyone to think that the struggle against the spirochete of syphilis will come to a victorious conclusion merely by discovering ever more effective bombs for its destruction. Nevertheless congratulations are in order for the progress that has already been made and for the wisdom of the plan for the future.

#### REFERENCES

1. Chargin, L., Leifer, W., and Hyman, H. T. The Application of the Intravenous Drip Method to Chemotherapy as Illustrated by Massive Doses of Arspenamine in the Treatment of Early Syphilis. *J.A.M.A.*, 104:878, 1935.
2. Thomas, E. W. and Wexler, G. Review of 2,144 Courses of Rapid Treatment for Early Syphilis. *Am. J. Syph., Gonorr., & Ven. Dis.*, 28:529, 1944.
3. United States Public Health Service Evaluation of Massive Arsenotherapy for Syphilis. Cooperating Clinics of New York and Midwestern Groups. *Ven. Dis. Inform.*, 25:323, 1944.
4. Cooperative Clinical Studies in the Treatment of Syphilis: III. Results of Treatment in Early Syphilis. *Ven. Dis. Inform.*, 13:253, 1932.

# Refrigeration in a Food Control Program

H. S. ADAMS \*

*Sanitarian (R), U. S. Public Health Service, Washington, D. C.*

THE important part good food refrigeration plays in a food control program cannot be over-emphasized; in fact, its position is outranked only by the food itself and by handlers who prepare and serve it. Innumerable instances are on record where lack of refrigeration or failure to utilize available facilities properly has been an important contributing factor in outbreaks of food poisoning. This article will discuss certain features of refrigeration with which the food sanitarian and the public health worker should be familiar.

Food refrigeration has for its primary purpose the preservation of food by arresting metabolism, bacterial growth, and enzymatic action. While control in all three instances contributes to the healthfulness and palatability of food, the one of most importance in food sanitation work is that relating to the control of bacterial growth through low temperatures. With the advent of mechanical refrigeration, temperature control has been greatly improved to a point, in fact, where mechanically operated boxes are so common that their presence and function in a food store or restaurant is sometimes taken for granted. Such a concept should be avoided, since even the best equipment through lack of care alone may become inefficient and fail to accomplish its intended purpose. Bearing upon this

point is the result of a survey of three hundred restaurants made by the author, in which refrigerator temperatures in 26 per cent of them exceeded 50° F. Therefore, a component part of each food establishment inspection should be a careful determination with an accurate thermometer of the temperature maintained in every refrigerator where perishable foods are stored. Not only is such a check valuable from the public health viewpoint but it will impress upon the proprietor the importance of refrigeration and offers an opportunity to emphasize that his refrigeration equipment must be correctly maintained and adjusted properly to meet effective temperature requirements. While 50° F. is generally accepted as the maximum allowable temperature for the storage of many perishable foods, a temperature several degrees lower is both preferable and desirable. Table 1 shows the recommended retail storage temperatures in degrees F. for a variety of foods.<sup>7</sup>

From this table it can readily be seen that in a large majority of cases a refrigeration temperature below 50° F. is recommended; in fact, for fresh meat a range of 35–40° F. is recommended, and for poultry 29–32° F. These data emphasize that the type of food under refrigeration is largely the determining factor for proper temperature, and that a single temperature standard which fails to appraise the kind of food being refrigerated is not a sufficient criterion.

\* Inactive reserve; now serving as Chief, Bureau of Environmental Hygiene, Minneapolis Division of Public Health.

TABLE 1

*Recommended Retail Storage Temperatures in Degrees F.*

<i>Fresh Fruits</i>	<i>Degree F.</i>		<i>Degrees F.</i>		<i>Degrees F.</i>
Apples	38-42	Dates	55-60	Oranges	50
Avocados	40-45	Figs	40-45	Peaches	50
Blackberries	42-45	Gooseberries	45-50	Pears	40
Cantaloupe	45-45	Grapes	40	Pineapples	50
Cherries	40	Grapefruit	50	Plums	40-45
Cranberries	40-45	Melons	40-45	Raspberries	40-45
Currents	40-45			Strawberries	42-45
<i>Fresh Vegetables</i>					
Artichokes	45	Celery	45-50	Peas	40-45
Asparagus	40	Corn	45	Peppers	40-45
Beans	40-45	Cucumbers	45-50	Potatoes	36-40
Beets	45-50	Eggplant	46-50	Potatoes, sweet	55-60
Brussels sprouts	40-45	Endive	45-50	Radishes	40-45
Broccoli	40-45	Lettuce	45	Rhubarb	45-50
Cabbage	45	Mushrooms	55-60	Spinach	45-50
Carrots	40-45	Okra	40-45	Sauerkraut	36-38
Cauliflower	40-45			Tomatoes	45-50
<i>Meats</i>					
Bacon	36-40	Hams	36-40	Pork	36-40
Beef	38-42	Lamb	36-38	Poultry	29-32
Bologna	36-40	Liver	36-38	Sausage	36-40
Corned beef	36-40	Lard	40-45	Tongue	45-50
Chicken	35-40	Mutton	34-42	Veal	36-40
<i>Other Products</i>					
Beer	45-48	Swiss	40	Lobsters, boiled	36-40
Bread	46-50	Whole milk	34-36	Lobsters, live	39-45
Cheese		Chocolate	60-65	Milk	40-45
Brick	30-35	Cider	46-50	Molasses	45
Cheddar	36-38	Cream	40-45	Oysters	32-35
Cheshire	38-40	Dough	46-50	Oysters, opened	23-30
Limburger	42-44	Eggs	38-45		
Neufchatel	50-52	Fish, fresh	25-30		
Roquefort	39-41	Honey	45-50		
Skim milk	48				

A second point of interest to the food sanitarian is the amount and kind of refrigeration available and how it is used. While no standard ratio of refrigerated space to volume of meals served daily has been developed, due to the many kinds of restaurants and stores with their variety of merchandising methods, it is of interest to note the several types of refrigerating systems which may be used in a single restaurant. Classified, they are as follows<sup>1</sup>:

1. Drinking water and beverage cooling.
2. Storage of meats, fish, vegetables, and dairy products. In this case the size of the restaurant generally determines whether all products are held in one refrigerator or whether separate boxes are maintained at different temperatures for each class of food.

3. Manufacture and storage of ices and frozen desserts.

4. Making of bulk or cube ice.

5. Making and storage of candies in certain types of restaurants.

6. Storage of ingredients for a baking department.

7. Refrigerated cafeteria displays.

8. Frozen food storage cabinets.

Judging the adequacy of refrigeration requires an intimate knowledge of the kind of business conducted plus frequent observations of the refrigeration equipment under conditions of practical use. Failure, for example, to provide adequate low temperature refrigeration for fresh meat because a box is used for general purpose storage and opened fre-

quently with resulting temperature fluctuations and increases would point to the need of additional equipment devoted to meat storage alone. When sufficient facts and data have been accumulated, inadequacies should be pointed out to the proprietor and recommendations made for correcting such deficiencies as may be found.

Closely allied with adequacy is, of course, the question of effective use. Certain practices reduce the efficiency of refrigeration, in turn affecting the food. These should be noted by the food sanitarian and advice given to avoid them. Food should not be stored on top of cooling units or on the drip pan below the unit, since such a practice restricts air circulation and may contribute to frosting of the unit. Refrigerator shelves should not be covered with paper, linoleum, or similar material, since this causes stagnation of air, creates excessive sweating of products, and increased operating expense.<sup>5</sup> The storing of fresh meat so there is a complete circulation of cool air around it is to be recommended. Hooks upon which meat is hung in storage refrigerators should be of the movable type to allow proper spacing of meat to avoid contact, one cut with another. Placing large amounts of food in a single container should be avoided, since cold air will not reach the innermost layers rapidly and refrigeration will thus be delayed. For the same reason sliced meats should be stored in layers not exceeding four inches.

The possibility of contamination reaching the refrigerator and its contents should be investigated. Drains from refrigerators should not be piped directly to sewer or waste lines. There should be a break in the line so that drainage from the refrigerator will go to a small sink or open hopper and this fixture trapped and properly sewer connected. This precaution is necessary to eliminate the possibility of sewage

backflow reaching the refrigerator. In lieu of such an approved drain connection, water-tight drip pans may be used.

In addition to these points there is the cleanliness of the refrigerator to be considered. Observation quickly reveals the condition of side walls, trays, racks, doors, gaskets, and fixtures. The refrigerator, must, of course, be given a thorough cleaning at frequent intervals with warm water containing a good detergent. Wiping the interior of the box after it has been cleaned with a cloth moistened in a bactericidal solution is to be recommended. For deodorizing, charcoal hung in net bags will absorb odors. Gaskets which are worn and door fittings and hardware in poor condition should of course be replaced or repaired to make all doors tight fitting.

The increased use of ultra-violet light, especially in meat refrigerators, is another matter of interest to the food sanitarian. The question of using ultra-violet light as an adjunct to refrigeration is quite controversial; therefore, its limitations as well as some beneficial effects claimed for it should be recognized. Ultra-violet light in conjunction with refrigeration is used mainly as an inhibitor to microbic growth, since the germicidal value of radiations of the mercury spectrum at wave length  $2537\text{\AA}$  is known to be effective. The best bactericidal lamps emit about 80 per cent of their radiations at this wave length.<sup>2, 3</sup> If initial infection and bacterial surface contamination on meat is low, ultra-violet light is an effective means of destroying organisms present. One writer has suggested that destruction is accomplished if initial infection does not exceed 1,000 bacteria per sq. cm. Ultra-violet radiation produces a slight coagulation of meat surfaces sufficient to reduce evaporation or shrinkage materially, reduction amounting to several per cent. Higher relative humidities, also a fac-



tor in reducing evaporation from meat, can be maintained when ultra-violet light is used, but humidities of about 90 per cent without radiation involve, after a few days, surface infection by bacteria or mold or both with subsequent loss from trimming.

Reduction of air-borne infection and removal of objectionable odors from cold storage boxes is also claimed when ultra-violet light is used. Ozone, having germicidal properties, is produced in low concentrations when ultra-violet light is used. Radiations below  $2000\text{\AA}$  will convert a portion of the oxygen to ozone and if bacteria are in single layers on food surfaces and not covered with organic material, 1.5 p.p.m. in 3 to 4 hours kill 99 per cent of the bacteria and 0.5 p.p.m. 90 per cent.<sup>4</sup>

Appraising the use of ultra-violet light further, we find several limitations. One of the first is that initial infection and surface bacterial contamination be low. The number of layers of living or dead bacteria on the surface being radiated is a determining condition of control.<sup>6</sup> Experimental work has demonstrated that effective bacterial destruction does not occur when more than two layers are present or when organisms are protected by organic matter. Ultra-violet rays have little penetrating power so that even very thin films of dirt or moisture may shield the micro-organisms from the damaging effect of the radiation. "A film of beef juice 0.2 mm. thick reduced the intensity of ultra-violet light a thousandfold."<sup>8</sup>

The question of rancidity must also be recognized. Butter, cream, lard, and fat sausages exposed to direct radiation will become rancid and must be protected by storing in a covered container. Fats of fish likewise are adversely affected by short wave lengths of light and by ozone. The ozone generated in the presence of ultra-violet light is of exceedingly low concentrations, at most a few tenths of 1 p.p.m. of air, and its

germicidal value cannot be considered particularly significant unless the exposure time is a substantial number of hours. Layers of bacteria and organic matter also reduce its bactericidal powers.

Another limitation involves meat surfaces that are in the shade or are shielded from the direct line of radiation. Even surface destruction of microbic life is not accomplished when such surfaces are outside the line of radiation, although advocates of radiation have claimed that ozone will reach these surfaces and destroy organisms. However, a moderate air movement is necessary to accomplish this and slowly moving air is not provided in all refrigerators where ultra-violet light is installed.

In some cases operators have been led to believe that higher refrigerator temperatures could be used safely when radiation was employed. For the several reasons mentioned above, this is of course erroneous and even though higher temperatures and high relative humidities have been used in a certain commercial tenderizing process, both have been carefully supervised by trained technicians, and more than ordinary controls provided. To attempt either tenderizing meat or preserving it on the premise that ultra-violet light is the main factor in control is a mistake and should be so recognized by the ordinary user.

Because refrigeration is one of the important and essential factors in the proper care and handling of perishable foods, it deserves careful and regular attention on the part of all food sanitarians. High standards of operating efficiency and maintenance should be emphasized to assure maximum benefits in terms of safe wholesome food.

#### REFERENCES

1. Borden, R. E. Refrigeration in Restaurants. Refrigeration Application Data No. 6. Published as Section 6 of *Refrig. Engin.*, Oct., 1939.
2. Ewell, Arthur W. New Developments in the

Use of Ultra-Violet Light in Food Storage. *Ibid.*, 37, 1 (Jan.), 1939.

3. Ewell, Arthur W. Researches on Ultra-Violet Light and Ozone and Their Relations as Germicidal Agents. *Ibid.*, 41, 5 (May), 1941.

4. Ewell, Arthur W. Allies of Refrigeration in Food Preservation. *Ibid.*, 43, 5 (Mar.), 1942.

5. Conservation Tips on the Use and Care of Commercial Refrigeration and Air Conditioning Equip-

ment. Frigidaire Division, General Motors Corporation, 1944.

6. Jacobs, Morris B. *The Chemistry and Technology of Food and Food Products*. Vol. 2 Interscience Publishers Inc., New York. 1944.

7. King, R. E. Refrigeration in Retail Stores. *Refrig. Engin.*, July, 1940

8. Tanner, F. W. *The Microbiology of Foods*. Garrard Press, Champaign, Ill. 1944.

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## Arthritis Research Center

The National Arthritis Research Foundation on July 16 announced a campaign to raise \$2,500,000 for an arthritis research center in Hot Springs, Ark. Studies would be carried on of the causes and cures of arthritis which is "one of the leading and one of the least known and most neglected of the chronic diseases." At the luncheon announcing the campaign, Dr. Willard Squires of New York Hospital called arthritis the "stepchild of medicine" because no physician likes to care for arthritis patients. Dr. Thomas Parran reported that 3,000,000 persons in the country are suffering from arthritis and another 4,000,000 from other forms of rheumatoid diseases, or more than the number suffering from cancer, tuberculosis, heart diseases, and diabetes combined. He declared that the new research center would help to overcome

the deficiencies in facilities for early diagnosis and treatment and for undergraduate and graduate training in this specialty.

Hot Springs has been selected as the site for the center because of the natural hot waters there and the large source of clinical material available from the thousands of sufferers who go there for the baths, the favorable climate, the proximity of the Army and Navy General Hospitals and of the Levi Memorial Hospital. The officers of the Levi Hospital and public health officials organized the Arthritis Research Foundation in 1945.

The fund campaign will be formally opened on October 7. Chairman of its National Board of Sponsors is Lionel Barrymore who has been confined to a wheel chair for many years as an arthritis sufferer.

# What Good Are Health Museums?

BRUNO GEBHARD, M.D., F.A.P.H.A.

*Director, Cleveland Health Museum, Cleveland, Ohio*

HEALTH museums are distinctly different from medical museums. The emphasis in medical museums is on professional education; health museums are for lay education. Medical museums feature disease; health museums aim at better health for more people, health being understood as being physically and mentally at ease.

The forerunners of health museums were the museums of hygiene of the last century. One of the earliest ones was Parkes Museum of Hygiene founded 1876 in London, better known (since 1888) as the Royal Sanitary Institute. In the same year a National Museum of Hygiene was opened in Washington. The emphasis in these museums was on environmental sanitation, bacteriology, and communicable diseases. The German Hygiene Museum in Dresden has generally been recognized as having developed two distinctive features: regarding subject material, human biology was made the focal exhibit; regarding technique, preference on three-dimensional models, animation and visitor participation. Its collection "Der Mensch" culminating in the "Transparent Man" has become world known in professional and interested lay circles. This is now a thing of the past—the Museum was completely destroyed on February 10, 1945, by fire following an air raid.

The United States was very slow in developing health museums. Evart G. Routzahn's leadership in health exhibits, especially in travelling exhibits, is well known. But before World War I, the use of museum methods for health education was not thought of as advisable or practical, in spite of good experience in many European countries. One

exception was the American Museum of Natural History in New York City. Here, in 1912, with Dr. C.-E. A. Winslow as curator, the first museum exhibit on public health was opened. To the dismay of some of the curators, the exhibit was very popular, drawing something like 500,000 people. The Museum also was host to the National Tuberculosis Exhibit.

After the end of World War I, many groups began to think and plan for the establishment of health museums in the United States. A great step forward was the creation in 1930 of the Committee on American Museum of Hygiene by the American Public Health Association. Dr. Victor G. Heiser was its first chairman. Homer N. Calver has been the secretary of this committee from the beginning. In the *Proceedings of the Dedication of the American Museum of Health* at the New York World's Fair in 1939, Calver has traced the many steps leading up to that event. The Oberlaender Trust of the Carl Schurz Memorial Foundation, under the leadership of Dr. Haven Emerson, one of its board members, and Dr. Wilbur K. Thomas, its director, was instrumental in securing \$50,000 worth of duplications from the German Hygiene Museum. This material was first on display at the New York Museum of Science and Industry in the winter of 1937-1938, and later made up the main exhibits of the "Hall of Man" at the New York World's Fair. An important addition was the first public showing of the Dickinson-Belskie collection of sculptured models on human reproduction by the Maternity Center Association. These models are now the

property of the Cleveland Health Museum.

If attendance figures can be taken as a yardstick of "success" the 11½ million visitors in two years at the New York World's Fair is a degree of success it will be hard to duplicate. Unfortunately, World War II interrupted the transferring of the exhibits from temporary quarters to a permanent home.

Health museums are nothing less than science museums specializing in human biology, personal and public health. They are a natural bridge between preventive and curative medicine. As is the case with all science museums, health museums are made; they are manufactured—they are not collected. Ours is supposed to be "the age of science"; thus many forget that medicine is science and art, and so is education. One can teach people scientific facts, but education for healthful living calls for familiarity and appreciation of all the arts man has developed.

There are disadvantages in using the word "museum" which for too many people sounds like "mausoleum." Other names have been suggested. The Russians call their museums "Houses of Health." The term "Health Academy," or "Health Institute," has been proposed. The last name makes confusion with commercial enterprises too easily possible. Somebody who goes all-out for community organization will come along with "Community Health Education Center." We feel that the designation "Health Museum" correctly states the purpose, and has appeal for those not reached by the usual channels of health education.

A health museum could be rightly called a "Museum of Man." We are interested in public health education in the human estate of our nation. Social anthropology has made great strides in the last twenty years. Its findings should be combined with those of human biology and psychology.

Both have too often disregarded man's status as a member of a family. Medicine is slowly learning again that the patient is not only a person but also has a family. We know that after a child has had a guided tour of the Museum with his class, some weeks later the whole family will study the exhibits. The young married couple expecting the first baby is a frequent visitor with us.

The improvement of personal and public health depends on the application of the findings in human biology. The better we know the nature of man the better we can—if he wants us to—take care of his needs. Hygiene is nothing other than applied biology. Of course, organization is necessary but what really counts is the organism, in our case, the human organism. Health museums are ideal places in which to introduce man to himself. We can visualize health museums with not a single exhibit on disease—disease information being at present 75 per cent of our practised health education. Such a museum would center its exhibits around normal growth and development from embryo to puberty, with an introductory exhibit on heredity. Exhibits would culminate in "education to family life" dealing with all phases of human reproduction. It would naturally include nutrition, mental hygiene, physical fitness, recreation, etc.

Museums are recognized as places where one can see what he has up to now only heard about. Museums make people come, stop, look, listen and, last but not least, remember better what they have learned when the occasion comes for practical application. Museums are respected as places where one can find unbiased information, where nobody tries to sell anything other than true facts. Museums are the people's university. What is true for museums generally, is true for health museums. It is hard to make

preventive services or public health visible; even the protective activities of a health department are hard to picture. Medical services have their hospitals as visible expression; public health can be symbolized by a health museum. The public health movement needs a concrete expression of its ideals and methods strong enough, visible enough, not to be obscured by the "advertising smoke screen" of commercial concerns. There is no doubt that the existence of such an institution is a continuous reminder of the importance of health. We know that many of the 220,000 people daily passing the Cleveland Health Museum by street car start to think about a personal or family health problem through seeing the signs telling about special exhibits, from "Care of the Feet" to "Live Long and Like It."

Health education in this country is mainly financed by voluntary agencies through contributions by the people themselves. There is no doubt that we need and will have an increase in health-education activities made possible by tax sources. But experience has shown that even in those countries where health and medical services are available on a national scale, private agencies of health education are needed and are effective.

The organization of a health museum has the advantage of making new financial sources available. Many millions of dollars used for medical and health exhibits at the Chicago, New York, and San Francisco Fairs are good proof. An example on a small scale is the Cleveland Health Museum. During the two years prior to the opening of the Museum an active membership campaign was carried on by the Board of Trustees and the members of an "Advisory Council." The start of this campaign was a community conference called by the Academy of Medicine in the spring of 1936 to discuss the neces-

sity of a "Museum of Health and Hygiene" and the ways and means of securing the needed money. It was felt that, besides the need of large gifts in form of endowments, individual membership was necessary to lay a good foundation—for moral as well as financial support. Nearly 800 physicians, dentists, and interested lay people pledged at least a \$10 membership with the reservation "payment is not due on this pledge until the Trustees have declared that we have sufficient funds for successful operation." Very few of those who pledged had ever seen a health museum. If there is such a thing as "selling an idea," this is a striking example. Ninety-eight per cent of the pledges were paid in full at the opening in November, 1940. The campaign was successful only because it answered a real need which in Cleveland had two sources: the Academy of Medicine was anxious to replace its sporadic program of Sunday afternoon lectures, radio programs, and newspaper articles by a more continuous form; and the voluntary health agencies wanted more visual education material and did not want to depend on material available only from commercial sources. Continuation of program, long-range planning, lay participation, emphasis on visual means, are the main advantages of a health museum.

If one accepts "stimulation of public action" and "individual participation in preventive health activities as the principal objective of health education" (Mayhew Derryberry) a Health Museum can be very useful. Public action in a democracy is possible only with proper advance education of the public. Here are some examples:

Three years after the opening of the Cleveland Health Museum, the Bureau of Health Education was reestablished by ordinance of the Cleveland City Council in the Division of Health, having been out of operation for more than

20 years. We are in no position to judge whether there is a cause-and-effect relationship between the two events, but such is the belief of some of our friends.

The Museum's annual pollen count during August and September, widely published by newspaper and radio, has established ragweed as a source of trouble and has instigated the demand that something should be done about air pollution. This, we hope, will lead to proper action by the city, the mayor of Cleveland having just appointed an advisory committee on air pollution, of which the author is a member.

As another example of "individual participation," the Golden Age Hobby Show might be mentioned. At the request of the Cleveland Welfare Federation, the Museum designed a popular exhibit on geriatrics under the title "Live Long and Like It." Co-sponsored by the Cleveland Press, a hobby and handicraft show augmented the educational exhibits with 235 exhibitors; minimum age for participants was 65 years—the oldest being 89 years of age. More than 1,200 items were on display. It was the general opinion that this participation has helped in "mental rehabilitation" of the aged. So successful was the project, its annual occurrence is felt to be an obligation. The "Search for the Living Norma" with nearly 4,000 women participating, will be described on another occasion.

Being a museum does not mean that operation is restricted to the usual visual means such as exhibits and films; all other media and methods of health education are used, be it the printed word or the radio, the lecture or the discussion. To our own surprise, the Museum's exhibits are increasingly used in professional training, from the schools of cosmetics and embalming, to the schools of nursing and medicine. Two summer courses for students of

public health and public health nurses have been conducted at the Museum.

How costly are health museums? Generally speaking, exhibits are no more expensive than any other medium used in health education. We have very little real cost accounting in health education, but there is agreement that the minimum production cost for sound motion pictures, such as those originated by insurance companies, cost in the neighborhood of \$20,000. For the same amount of money, an old mansion on Cleveland's main street was remodelled for museum purposes, and most of the exhibits on display were designed and constructed.

The sceptical colleague will ask, "and how do you measure your results?" If we go by an accepted museum yardstick (one dollar per visitor) we hold our own and even better. But the quality of our educational effort cannot be measured by quantitative means. Doubling our attendance might mean diminishing educational returns. Appraisal on the basis of budget has also only limited usefulness. If one doubles the budget in the first five years, as we have done, it might be taken as a sign of growth and acceptance by the public who, after all, pay two-thirds of our expenses. The discrepancy between services requested and services rendered might be a real yardstick. But, which requests are legitimate for a voluntary agency and which ones should be rendered by a public agency? There is no instance in which health museums have been supported by tax funds in this country. However, operation by state health departments is quite reasonable, and even desirable, especially if there are provisions for extension and loan services.<sup>1, 2</sup>

#### REFERENCES

1. Knox, J. C. *Pub. Health Rep.*, 59, 29 (July 21), 1944.
2. For a detailed bibliography see *Making Health Visible*, Nov., 1945, published by the Board of Trustees, Cleveland Health Museum.

# Appraisal Forms and Sanitation Standards Used in the Michigan Community Health Project

HERBERT J. DUNSMORE

*Calhoun County Health Department, Battle Creek, Mich.*

THE Michigan Community Health Project (MCHP), initiated in 1930, is a coöperative undertaking of the W. K. Kellogg Foundation with state and local agencies and the people of seven rural counties in Southwestern Michigan.\* During the early period of health department work in the MCHP each public health engineer had to develop his own standards and prepare his own inspection forms. While this provided a maximum range for ideas and individual initiative, it also allowed many glaring differences in the requirements for various items. Such concepts as adequate ventilation and lighting, where no law or criteria were set up, usually varied with the different engineers. These variations in ideas led to confusion in the field. Establishments in one county would receive a "good" rating for conditions that another county would not approve. When it was decided to use the MCHP area for student training activities, the weakness of the procedure became even more obvious. Such words as "adequate," "sufficient," "abundant," etc., had to be interpreted to each student if anything approaching a uniform standard of appraisal was to be maintained, even within a single county.

Even though laws and state regulations covered many aspects of sanitation, a considerable amount of detail

was left to the judgment of the engineer or the sanitarian. Moreover, it was difficult, if not impossible, for any one person to know and retain all these laws, codes, and standards. A sanitarian would find himself often in doubt as to the correct answer, and would discover that he needed continually to make use of a rather large reference library. Many times he would not know where to look to find the answer.

There was need for a working compilation of sanitation standards based on the best information available. Such standards would not be expected to answer all the questions that might come up in the field. There would always be room for the staff worker to use his initiative and knowledge to adapt standards to field conditions. What was needed was a tool with which to iron out the wide variations between the judgments of public health engineers.

To attack this problem, the engineers from the seven counties held meetings with the Consultant in Public Health Engineering of the W. K. Kellogg Foundation. After considerable discussion and study of each item of sanitation, they drew up a field manual which represented the pooled judgment of the group, based on their experience in this area, as well as the factual material available at the time. The field manual included standards on resorts, schools, dairy farms, dairy plants, food, meat,

\* Allegan, Barry, Branch, Eaton, Calhoun, Hillsdale, and Van Buren Counties

and industry. Examples of resource material used were: for milk sanitation, the U. S. Public Health Service code of interpretation, milk bulletin from the City of Baltimore, and other bulletin material from agricultural colleges; in resort sanitation, the Michigan Department of Health rules and regulations; for meat sanitation, the U. S. Department of Agriculture meat regulations; for the item of water supply, the standards developed by the state sanitary engineers and adopted by the Michigan Department of Health.

It was decided to have three standards for each item (good, fair and poor). Some believed that an operator should be encouraged to do better than just comply with a regulation—that credit should be given for going a step beyond what was usually accepted as passable. The question might be asked as to whether there is any middle ground. Others believed that a situation is either good or poor, right or wrong, complies or does not comply. This was true with a few items; for example, an air space heater on a pasteurizer vat, either there is one or there is not. But in most cases conditions exist that were acceptable but not of the best. In planning for a new installation, the better standard would be recommended. For example, on milk equipment, stainless steel is better than tin-coated copper, but both are acceptable. In all cases where there was a specific state law or regulation covering a given item, the criteria were set up so that non-compliance with the legal requirement would result in a "poor" rating.

The standards were arranged in three columns. The first column stated the recommended standards by items and was titled "good." The standards in the center column described acceptable conditions and were titled fair." The "poor" column listed conditions that were less than "fair." Symbols were

placed between the caption of the items and the standards for the purpose of locating the check mark as determined on the field inspection. These symbols were arranged in three vertical rows and corresponded to the "good," "fair," and "poor" columns of the standards. Each standard was decided upon separately, with no thought as to the weight or public health significance it might have in the overall rating of the establishment.

When the "good" column and the "fair" column included recommendations that were ahead of the community, they were given less weight so the influence on the establishment's rating would not be affected too greatly. For example, under the item "Type of Toilet," a "good" rating required a flush toilet; "fair" could be obtained with a septic toilet; but a privy would be rated "poor." However, when due weight was assigned to all items, it was possible to have a privy and still get a "good" establishment rating.

The following are two sample items on dairy farm sanitation from the manual (Table 1).

After the standards for the items were agreed upon, a color grading system was developed to weight each item according to its public health importance. Formerly a system of percentage points was used which deducted a certain number of points for each item found to be poor. There were several obvious weaknesses in this system, one being that an important item might be poor, yet the amount of points that could be assigned to the item would not be enough to reduce the total percentage points to a low figure. A scoring system was needed that could place enough weight on any given important item to reduce the entire establishment rating to "poor" if it were a public health hazard. Such a system of scoring was devised by using colors in place of points. Colors in the symbols referred to above, showed



TABLE 1

		G G W					
2. HEAT-VENT.		□ □ □					
		G W R					
					<i>Good</i>	<i>Fair</i>	<i>Poor</i>
a. BARN	○○○	No condensation. No offensive odors.			No.	At least 400 cu. ft. per animal. Fairly free from odors.	Rank, putrefactive odor, condensation.
		Windows tip in at top or adequate inlet and outlet ducts equipped with controllable dampers or adequate exhaust fan used when cows in barn.				Sliding windows or ducts without dampers or inadequate. Hay or silo chute used as ventilator shaft.	Not adjustable; fixed. No ducts. Exhaust fan not used.
b. MILK HOUSE	○○○	No condensation or offensive odors.					
		Adjustable top and bottom or sliding windows or tip in at top or ducts equipped with controllable dampers or exhaust fan.				Ducts without dampers.	Condensation or putrefactive odors. Not adjustable; fixed or no ducts or no exhaust fan.
3. LIGHTING		□ □ □					
a. BARN		○○○					
Windows	○○○	4 sq. ft. per 100 sq. ft. of floor area. Clean. Located for good distribution.				2 sq. ft. per 100 sq. ft. of floor area. Fair distribution.	Less than 2 sq. ft.; obscured.
Elec. Fixtures	○○○	3 foot candles at milking area. Permanent electrical.				1-3 foot candles. Other artificial. Movable.	None or less than 1 ft. candles.
b. MILK HOUSE		○○○					
Windows	○○○	Window area 10% of floor area. Windows clean.				Windows are 5-10% of floor area. Fairly clean.	Less than 5%. Not clean.
Elec. Fixtures	○○○	10 f. c. on work surfaces.				3 to 10 f.c. Not electric.	Less than 3 f.c. of artificial light.

G = green; W = white; R = red.  
 All squares are green, green, white.  
 All circles are green, white, red.

the public health significance of one item as related to the others. The colors in the small circles are used to rate the larger circles or lettered items. The colors in the large circles are used to rate the squares, or numbered items, and finally, the colors in the squares are used to determine the total establishment rating. The sanitarian could place the check marks in the proper symbol while making the field inspection and after the items were checked it automatically placed the weight on the total

rating. By the use of colors it was possible to place a controlling weight on any given item. This system provided a method that made it easy to determine the results or rating.

In using the system here described it was found that it took considerably longer to make the first few inspections, until the persons became familiar with the standards for each item. With a little practice, however, the system became as fast as any formerly employed, and the end results were more uniform.



directed our attention to the wider area and to question what could be accomplished if all the counties put on a united drive to raise the majority of the establishments of any one kind to a rating of "fair" or better. This was tried in school and milk sanitation with surprisingly good results.

This system of evaluation was used in the MCHP area for five years. As experience accumulated, various items were reviewed and changes made to fit more closely the problems of the field. The Michigan Department of Health and the School of Public Health of the University of Michigan became interested in the system and met with the group of engineers of the MCHP to broaden its use. At this time many items were reworded to reflect more accurately the thinking of the group. The language of the field manual was then changed to read exactly alike whenever the same item in any sanitation program was being described. This made it easier to change from one type of establishment to another when making inspections, and the sanitarian had less details to remember. The items were arranged so that they appeared in the same location on each inspection form. A code number was assigned to each item: 1 for "Building," 8 for "Water Supply," etc., while 9 was "Bathing" and only appeared in the resort and school forms.

The challenge to the public health engineer is not to see how many establishments he can drive out of business, but rather to improve those that he has, so that they do a satisfactory job. His efforts are based on the fundamental principle that people will make the needed changes when they understand the reasons for them. The MCHP sanitation standards enable the operator of any particular establishment to know the requirements for any given item and to know the public health significance of the particular requirement.

The significance of the item would be indicated to the operator by the colors that are found in the symbol provided at the left margin of the standards.

These standards were not developed with the idea of making them law. They should be regarded as recommendations and should be presented to the owners of the establishments under inspection as recommendations. For legal backing the short form of the U. S. Public Health Service *Milk Ordinance* is used in milk control work and the *Food Code* for food control. For school sanitation, compliance is on a coöperative basis, since in Michigan the school laws are under the Department of Public Instruction. Copies of all recommendations to school directors and boards are sent to the County School Commissioner, who has the legal responsibility for the schools of the county. In resort sanitation and in industrial health the program functions entirely on a coöperative basis.

These standards were developed with the idea of being as educational as possible to persons involved in the inspection. For example, the school standards are explained to teacher groups in workshop courses. Each teacher is given a copy and urged to evaluate the sanitation status of her school. Many of the teachers have the children and parents participate in this evaluation. It provides a good method for the people interested in the school to appraise the building objectively, to know how it rates from a sanitation standpoint, and what improvements are necessary to raise the rating on any given item. Space is provided on the form for an improvement schedule, and the school boards can budget their efforts to improve first the items that will give them the better rating. Home economics teachers use the forms as resource material in their food classes. Home hygiene survey forms were developed also, and in some school districts the

children after evaluating the school made a home hygiene survey of all homes in the school district. Three universities are utilizing these standards as a teaching device in their sanitation classes. Pasteurizing plant operators use the retail dairy and dairy farm sections to evaluate their plants and producer farms. This system is now in use in many of the county health departments in Michigan. Many educators in Kentucky, Mississippi, and Oklahoma are finding them useful in their respective areas.

Though intended neither as a potential legal requirement nor as a system of criteria covering every conceivable sanitary situation in the public health field, the system of evaluation developed by the engineers of the MCHP has

accomplished great improvements in the application of uniform standards through the seven county area. It has proved indispensable in the instruction of scores of students who annually spend some months in the area participating in the field training program. The method of group attack upon the problems of diversified standards and techniques of application is recommended to any environmental sanitation department. It is a method that cannot fail to pay dividends if it only demonstrates that legally independent agencies can work together for the solution of common problems. The Michigan Department of Health has sent a courtesy copy of the field manual to every county health department in the United States.

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## Medical Care for American Soldiers

*News Notes*, July 15, 1946, issued by the Office of The Surgeon General, U. S. Army, announces the appointment of 58 permanent civilian surgeons and 16 leading civilian physicians as consultants to the Secretary of War through The Surgeon General. These individuals, all of whom are specialists in their respective fields, are for the most part former Medical Corps officers

who served with distinction during the war. Located strategically throughout the country, they have been appointed as part of the Army Medical Department's program to maintain the highest possible standards of medical practice. Their aim will be to evaluate, promote, and improve, wherever possible, the quality of medical care given the American soldier.

# Gonococcus Examinations: A Comparison of Slides, Mailed Slants and Immediate Plates

GRACE ELDERING, Sc.D., F.A.P.H.A., AND EVELYN PALSER

*Bureau of Laboratories, Michigan Department of Health, Western Michigan Division, Grand Rapids, Mich.*

THE advantages of the culture method over the slide in the laboratory diagnosis of gonorrhea have been demonstrated repeatedly. However, the lack of a satisfactory procedure for sending material for culture through the mail has prevented wide use of the technique. Except in hospitals and clinics with adequate laboratory facilities, culture procedures have so far had a limited application, and the physician in private practice still relies mainly upon slides.

Many methods for mailing gonococcus cultures have been reported, including the use of dry ice, thermos jugs, inhibiting dyes, and specially enriched media.<sup>1-5</sup> Some of these procedures have given satisfactory results but are not practical for general use. Recently Usher and Stein<sup>6</sup> reported the statewide use of mailed cultures in New Jersey. They used the modified horse-plasma hemoglobin agar of Peizer and Steffen<sup>7</sup> dispensed in small tubes and overlaid with carbon dioxide. The inoculated slants were brought within 3 hours to culture stations where they were incubated until they could be mailed to the central laboratory. An increase of 67 per cent in positive findings over the results with slides was noted in a large series. These results are striking, but at the present time the use of the culture stations for prelimi-

nary incubation is not practical for the comparatively thinly populated area served by our laboratory. Porterfield and Nelson<sup>8</sup> have reported a series of 151 cultures for gonococci on slants of proteose No. 3 agar and hemoglobin enriched with Bacto supplement A and dispensed in screw-capped tubes. Incubation was delayed for 8 hours. Compared with slides, the cultures resulted in an increase of 60 per cent in positive findings.

It appeared to us that a culture method that would meet the needs of the physicians in our area must fulfill the following requirements:

1. The method must be simple and must involve the use of a medium which remains satisfactory for several weeks.
2. The specimen must be suitable for mailing without any special packing device such as dry ice.
3. The results must show considerable advantage over the slide method.

The use of a solid medium dispensed in tubes seemed the most practical starting point, and in April, 1944, we began a study of delayed cultures on slants of coagulated blood agar, using material from the Grand Rapids Social Hygiene Clinic. This report includes the results of approximately 1,000 delayed specimens for gonococcus cultures compared with slides and routine immediate cultures on plates.

## METHODS

*Medium*—The proteose No. 3 agar and hemoglobin medium of Difco was dispensed in Petri plates for the immediate cultures, and in slants in screw-capped tubes for the mailed specimens. The medium was freshly prepared each week, and was kept in the refrigerator until the day of use.

*Procedure for obtaining specimens*—Specimens were obtained from female patients at the Grand Rapids Social Hygiene Clinic by the physicians and nurses in charge. Smears on slides were prepared from the cervix, urethra, and vagina. The routine or immediate cultures on plates were made according to the procedure we have used for several years; the swabs with exudate from the cervix and urethra were placed immediately in separate tubes containing 1 ml. of tryptose veal infusion broth. After the clinic the nurse removed the swab from the broth and streaked one-quarter of a "chocolate" agar plate, using one plate for each source. The plates were brought to the laboratory where the bacteriologist spread the inoculum over the remaining three-quarters of the plate from the streaked area, using a wire loop. The plates were then incubated at 37° C. in jars with candles.

When the study of delayed cultures was first started, slants were inoculated at the laboratory from the swab in broth, and the slants were allowed to stand at room temperature for 24 hours before being placed in the incubator. Later, in order more nearly to approach a procedure which could be used in a physician's office, an additional swab was used at the clinic for each source, and a slant was inoculated immediately, without the use of broth. This required the use of 3 swabs from each source, one each for the plate, slant, and slide. At first these inoculated slants were brought to the laboratory, where incubation was delayed for 24 hours. When

the results by this method were found to be encouraging, slants were sent to the laboratory by mail.

*Examination of cultures*—After 48 hours at 37° C. plates and slants were examined for colonies typical of gonococci. These were tested with dye for the oxidase reaction, and oxidase-positive colonies were picked, Gram-stained, and examined microscopically. Early in the study the gonococci were isolated in pure culture for further study. More recently positive reports have been made on the basis of colony, oxidase reaction, and microscopic appearance, except in the case of atypical organisms or cultures from medicolegal cases. We are now beginning to make use of slide agglutination tests, using a commercial antiserum.

## RESULTS

The results in the early part of the study, when the slants were not mailed but were allowed to stand for 24 hours at room temperature before being placed in the incubator, have been summarized separately in Table 1.

TABLE 1  
*Cultures for Gonococci: Preliminary Series  
of 172 Delayed Slants Compared  
with Slides and Plates*

Slide		Delayed Slant		Plate	
Result	No.	Result	No.	Result	No.
Negative	139	—	121	—	118
		+	18	+	3
		—	4	—	3
Positive	33	—	4	—	1
		+	29	+	3
				—	2
				+	27

Unsatisfactory slants: 1

The tabulated results include 79 slants inoculated with swabs from broth, and 93 slants inoculated with swabs directly from the patient. Of the 139 negative slides, 121 were also negative with the slants and 18 were positive.

Three specimens negative by slide and slant were positive with the immediate culture on plate. Three of the plates corresponding to the 18 positive slants were negative. Of the 33 positive results with slides, 4 were missed by slant and 3 by plate.

The results in this preliminary series of 172 were analyzed further in Table 2.

TABLE 2

*Positive Gonococcus Results: Comparison of Delayed Slants with Slides and Plates Preliminary Series of 172*

	Number	Per cent of Total	Advantage Over Slide	
			Number	Per cent
Positive				
Slide	33	19.2	..	....
Slant	47	27.3	14	42.4
Plate	48	27.9	15	45.5
All methods	54	30.8	..	....

The total numbers of positive slides, slants, and plates were 33, 47, and 48, respectively. Expressed as per cents of the total number these are, in order, 19.2, 27.3, and 27.9. There were 14 more positive results with slants than with slides, or an increase of 42.4 per cent. With the plates the advantage over the slides was 15, or 45.5 per cent. The total number of positive results with all three methods was 54, or 30.8 per cent.

Based upon these results with delayed

TABLE 3

*Cultures for Gonococci: Results of 902 Mailed Slants Compared with Slides and Plates*

Slide		Mailed Slant		Plate	
Result	No.	Result	No.	Result	No.
Negative	815	—	749	—	710
		+	66	+	39
		—	21	—	6
Positive	87	—	21	+	6
		+	66	+	15
				—	2
				+	64

Unsatisfactory slants: 21

cultures, inoculated slants were sent from the clinic to the laboratory by mail. The clinics were held from 1 to 3 in the afternoon, and the cultures reached the laboratory between 8 and 9 o'clock the following morning. According to plan, they were not placed in the incubator until noon. At this time the screwed caps were loosened and the slants were placed in a moist jar with a candle.

The results of 902 mailed slants compared with slides and plates are shown in Table 3.

There were 815 negative slides. Of the corresponding mailed slants, 749 were negative and 66 positive. In 39 instances plates were positive when both slant and slide were negative. Of the plates corresponding to the 66 positive slants, 60 were positive and 6 negative. There were 87 positive slides, of which 66 were positive by slant and 79 by plate. In other words, 21 were missed by slant and 8 by plate. Twenty-one slants were overgrown and unsatisfactory and were not included in the tabulation.

TABLE 4

*Mailed Slants for Gonococci: Positive Results in a Series of 902 Specimens Compared with Slides and Plates*

	Number	Per cent of Total Specimens	Advantage Over Slide	
			Number	Per cent
Positive				
Slides	87	9.6	..	....
Slants	132	14.6	45	51.7
Plates	178	19.7	91	104.6
All methods	192	21.3	..	....

The numbers of positive results by slide, slant, and plate were 87, 132, and 178, respectively. Expressed as per cent, these are, in order, 9.6, 14.6, and 19.7. Combining all three methods, there were 192 positive results. In other words, even the immediate plate failed, with 14 specimens found positive by slide or slant. There were 45 more positive findings by slant than by slide,

an increase of 51.7 per cent. With the plates, the increase in positive results over the slides was 91, or 104.6 per cent.

#### DISCUSSION

The study so far has been considered as exploratory only, but the results appeared sufficiently promising to form the basis for a preliminary report. One point of practical interest which requires further study concerns the time in transit. In this connection we now have under study cultures mailed from the Social Hygiene Clinic in Muskegon, a town 50 miles away. To date about one-half the specimens from Muskegon have reached the laboratory 2 days or more after inoculation, and with these the results have been poor. Further work is necessary to determine whether 24 hours is the maximum time which can elapse before incubation is started, in order to obtain satisfactory results.

As with all laboratory examinations, the care with which the specimen is collected must be stressed. This applies to the preparation of smears as well as to the inoculation of medium for culture. The fact that a larger number of positive results were obtained by the use of all three methods than by any one method alone illustrates the variation due to random sampling. It is realized that great variation in collection of specimens will be encountered among doctors in private practice. However, since this applies also to slides, the same ratio in positive findings obtained in the clinic series could still be expected.

It should be emphasized again that in order to be successful for wide application the culture method must be kept simple. Efforts should be directed toward obtaining the optimum conditions for the growth of the organism. The effect of small variations in technique was observed when we increased the time of autoclaving the medium during the early part of the

study. The longer period of heating the medium materially reduced the number of positive cultures. Also, any excess moisture on the slants tended to increase the unsatisfactory results, due to spreading of contaminating organisms.

In connection with future work it is expected to try various modifications of the medium. So far we have used only the Difco proteose No. 3 agar with hemoglobin. Addition of enriching substances such as yeast has been reported of value in immediate cultures and these should be studied in connection with mailed slants. Incorporation of inhibiting dyes in the medium might reduce the number of unsatisfactory results. And of course the real test of practicability will be made when the procedure is applied to a wider area.

#### SUMMARY

A study has been made of 902 mailed specimens for gonococcus cultures on slants of Bacto proteose No. 3 agar and hemoglobin in screw-capped tubes. There were 132 positive findings, or 14.6 per cent, compared with 87, or 9.6 per cent, positive with slides, and 178, or 19.7 per cent, positive immediate cultures on plates.

Compared with slides, the increase in positive results with slants was 51.7 per cent, and with plates, 104.6 per cent.

It is considered that the method as presented offers promise. Further studies are in progress pointed toward improvement of the procedure and definition of its limitations.

#### REFERENCES

1. Sanderson, E. S., and Allison, G. G. The Use of Dry Ice in the Shipment of Material for Gonococcus Cultivation. *Am. J. Syph., Gonorr. & Ven. Dis.*, 26:196, 1942.
2. Heathman, L. S., and Higginbotham, M. Culture Examination for *N. gonorrhoeae*. I. Comparison of Direct and Shipped Specimens for Culture. *Am. J. Syph., Gonorr. & Ven. Dis.*, 26:602, 1942.
3. Cox, O. F., and McDermott, M. Methods of Transmitting Material to a Laboratory for Gonococcus Cultural Studies. *A.J.P.H.*, 33:149, 1943.



4. Greene, R. A., and Breazeale, E. L. The Use of Swabs, Impregnated with Ascitic Fluid in the Laboratory Diagnosis of Gonorrhea. *J. Lab. & Clin. Med.*, 23:1211, 1938.

5. Hirschberg, Nell. The Use of a Solid Medium for the Transportation of Specimens for Gonococcus Culture. *Am. J. Syph., Gonor. & Ven. Dis.*, 29:64, 1945.

6. Usher, Glenn S., and Stein, Russell. A State-wide Gonococcus Culture Service. A System Utilizing

the Mail for Transmission of Specimens. *Ven. Dis. Inform.*, 26:77, 1945.

7. Peizer, L. R., and Steffen, G. I. A Modification of the Horse Plasma Hemoglobin Agar for Primary Culture of the Gonococcus. Usefulness of Nile Blue A in this Medium. *Ven. Dis. Inform.*, 23:224, 1942.

8. Porterfield, John D., and Nelson, Everett A. A Method Using Solid Medium in a Delayed Gonococcal Culture Procedure. *Am. J. Syph., Gonor. & Ven. Dis.*, 28:417, 1944.

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## Cancer Research Grants

Upon recommendation of the National Advisory Cancer Council the U. S. Public Health Service in July approved grants-in-aid totaling nearly \$50,000 to eight American universities for cancer research. One-fourth of this sum was for studies in gastric cancer which has been receiving special attention from the Cancer Council since 1940. In that year it sponsored a conference on gastric cancer at the National Institute of Health, which was widely attended by scientists from all parts of the country. The Advisory Council has requested Surgeon General Thomas Parran to call another such conference at the University of Chicago in the fall of 1946.

The members of the National Advisory Cancer Council are:

Dr. George M. Smith, Executive Director of Council, and Professor of Anatomy of Yale University

Dr. Frank E. Adair, President of the American Cancer Society, Inc., and a staff member of Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York

Dr. A. C. Ivy, Professor of Physiology, Northwestern University Medical School

Dr. Sherwood Moore, Director of the Mallinckrodt Institute of Radiology, St. Louis

Dr. Robert S. Stone, Professor of Roentgenology at the University of California

Dr. Charles B. Huggins, Professor of Surgery at the University of Chicago, Chicago School of Medicine

Surgeon General Thomas Parran, Chairman, *ex officio* of the Council.

# Dangers Associated with the Use of Living "Attenuated" Typhus Vaccine

JOSEPH F. SADUSK, JR., COL., MC, AUS,

AND

HARTWIG KUHLENBECK, CAPT., MC, AUS

*United States of America Typhus Commission, War Department, Washington, D. C., and the Preventive Medicine Service, Office of The Surgeon General, War Department, Washington, D. C.*

ALTHOUGH the dangers of the use of so-called "attenuated" living typhus fever vaccines have been repeatedly pointed out, these vaccines still continue to receive favorable comment from time to time.<sup>1, 2</sup> In November, 1945, one of us (J.F.S.), while engaged in typhus control activities in Hokkaido, Japan, obtained a copy of an official Japanese report entitled "Survey of the Typhus Epidemic in Hokkaido During the Greater East Asia War," compiled December, 1944, by the Sanitation Bureau, Department of the Interior, Government of Hokkaido. In Chapter IV of this report, pages 18-19, there is given a brief account of the difficulties that Japanese health authorities encountered in 1944 in the use of a "bile-attenuated" murine typhus vaccine for the prevention of epidemic typhus.

The purpose of this present brief communication is to record this unfortunate incident in the literature and once again to bring to the attention of investigators and health authorities the dangers involved in the use of a living typhus fever vaccine.

It is perhaps apropos of this point to state that the use of a killed yolk sac ether extracted epidemic typhus fever vaccine<sup>3, 4</sup> has been used with noteworthy success in the U. S. Army during the past World War II.<sup>5</sup> Indeed, as a direct result of the routine immu-

nization with this vaccine of all troops traveling to or stationed in areas where louse-borne typhus fever is present in the civilian population, there has not been a single death from the disease in the Army during the period from January 1, 1942, to December 31, 1945. Essentially similar beneficial effects devolving from the use of this vaccine have been noted by others.<sup>6-9</sup> Their observations reveal that the present ether extracted yolk sac egg typhus vaccine made with the Breinl strain of epidemic typhus diminishes the probability of a person developing epidemic typhus after exposure, greatly modifies the disease if it occurs in a vaccinated person, and practically prevents death from typhus.

The following is a translation of the Japanese document described above: Part 3. The incident of the "Takakura San Maru" with high temperature reactions.

In October, 1943, there was an outbreak of 130 cases of typhus among 420 fishermen brought back to Hakodate from the "Yaina No. 2 fishing ground" of the Kamchatka coast on board the "Shoho Maru" of the Japanese-Russian Fishing Company (Nichi-Ro Gyogyo Kabushiki Kaisha). In view of this happening, a plan was made to provide preventive inoculation for all fishermen engaged in fishing in northern waters and a request was sent to the Kitasato Institute.\*

\* Tokyo, Japan.

Personnel from this Institute came to Hakodate on May 10 and prepared preventive inoculations in the dispensary attached to the Japanese-Russian Fishing Company. From May 15 on, preventive inoculation was practised. At this time there was an outbreak of typhus in the city of Hakodate and its vicinity and as news of the inoculation spread, many persons requested the inoculation. Up to June 10, in addition to 8,000 fishermen, 67 members of the Hakodate Medical Association, 150 employees of the Hakodate city hospitals, and railroad personnel, personnel of the Maritime Transportation office, of the Marine Products School, Police officials and others, altogether more than 11,000 persons were inoculated. This typhus inoculation was known to consist of the causative organisms of typhus,\* *Rickettsia mooseri*, attenuated by bile and used in dilution. The progress of the inoculation was carefully watched, but up to then only about 10 per cent of the inoculated persons complained of light headache; inability to work, and other untoward reactions were not recorded. Thus, this inoculation program was not interfered with. Then by chance, on June 11, among 500 persons inoculated, there was a group of 306 laborers embarking on the "Takakura San Maru." From approximately June 18 on, while the vessel was in port at Otaru, about 218 of this group (about 70 per cent of the persons inoculated) developed an attack of fever; symptoms were headache, giddiness, and aching of the whole body. The temperature above 38° C. lasted generally for a period of 14 days and then subsided and the condition returned to normal. Approximately 7 days after the outbreak of fever more than 30 per cent of the persons affected showed a manifest positive Weil-Felix reaction of more than 1:1600, indicating typhus. Clinically, the condition could hardly be distinguished from typhus, but recuperation took place with mortality limited to 1 case. On account of the occurrence of this infection, the Government dispatched communicable disease control medical personnel to the spot for an investigation and at the same time issued a warning against the use of live organisms for preventive inoculation. The safe treatment of the severely affected patients and the course of the disease in the affected laborers were also supervised, health inspections were made, and thorough delousing was directed. Fortunately, other cases of infection did not occur.

Comment: Of the 306 laborers embarked on the "Takakura San Maru," 16 did not receive the inoculation. Of the 290 inoculated,

218 had a high temperature reaction with about 39°. Of the remaining 78 (sic) 12 had been typhus patients in Hakodate City in October of the previous year. Nine others had been in close contact with patients during the previous year but had not been ill; this time again, they had no reaction. The other 57 were not conscious of any reaction. Again of the 16 not inoculated, one reported feeling unwell for 2 or 3 days but it is not clear whether this was a symptom of infection. Again the earliest onset of the symptoms was on the 7th day, the latest onset on the 24th day. Onsets of symptoms on the 16th and 17th day were most numerous.

(End of translation)

#### DISCUSSION

The record of the use of living typhus vaccine presents a series of frank failures. As early as 1916, Nicolle<sup>10</sup> attempted the use of highly diluted virulent epidemic typhus organisms in graduated dosage. Such attempts were abandoned for obvious reasons. Likewise, the addition of immune sera,<sup>11</sup> attenuation by cold,<sup>12</sup> addition of phenol, formalin, or iron hydroxide,<sup>13</sup> or by coating first in lanoline and afterward in olive oil,<sup>14</sup> met with no success.

The usual mildness of murine typhus in man, as compared with epidemic typhus, led to the use of the causative organism, *R. mooseri*, for immunization against epidemic typhus. It will be recalled in this connection that recovery from murine typhus confers substantial cross-immunity in man against louse-borne typhus. Since it was realized that no strain of murine typhus is of sufficiently low virulence to be employed directly as a living vaccine, investigations were directed toward methods of attenuation of this organism. As a result of these investigations, four types of "attenuated" living murine typhus vaccine have been described: Blanc's biliated guinea pig suspension,<sup>15</sup> Blanc and Baltazard's flea feces (bile attenuated) modification,<sup>16, 17</sup> Nicolle and Laigret's dried, coated (egg yolk and oil) guinea pig and rat suspensions,<sup>18, 19</sup> and Laigret and Durand's mouse-brain passage (egg

\* Murine typhus.

yolk coated) modification.<sup>20</sup> The reader is referred to the review of Biraud<sup>1</sup> and Murgatroyd<sup>21</sup> for a complete description of these vaccines. The vaccine used by the Japanese in the report translated above is probably of the Blanc's biliated guinea pig suspension type.

Despite the optimistic views of Biraud<sup>1</sup> with respect to the use of living typhus vaccines, there is no evidence to show that the virus in any of the four types noted above is truly modified or really attenuated as is the case with either the smallpox or yellow fever virus as used in its respective vaccine. As Dyer<sup>22</sup> has pointed out, adequate dosage of these "attenuated" typhus fever vaccines in animals will produce the typical disease. That this fact also exists in the case of man is also well known, the clinical typhus fever which may develop after the administration of these "attenuated" typhus vaccines being passed off as a "reaction." Indeed, these reactions may be so severe as to cause death. An attempt to use the biliated vaccine of Blanc during the 1936 typhus epidemic in Chile<sup>1</sup> resulted in the development of clinical typhus with fatalities in some instances. Of 550 individuals inoculated with this living vaccine, 227 showed febrile reactions, 5 of which were fatal. These reactions undoubtedly were frank murine typhus infections. Suarez<sup>1</sup> explains these unhappy results by stating that the vaccinations in Chile were carried out by a person who did not have sufficient experience and who employed suspensions of 1/1000 guinea pig material instead of 1/2000. The reader may draw his own conclusions.

In addition to the danger of developing clinical typhus with these vaccines, two other perfectly obvious drawbacks still remain and should prove powerful deterrents to their use. First, fleas and lice may be infected by feeding on persons inoculated with these vaccines; and second, it is difficult to assure freedom

from bacterial contamination of these vaccines since they depend on the presence of a living agent for their action.

#### SUMMARY

An account is given of difficulties encountered by Japanese health authorities following the administration of a biliated living murine typhus vaccine. In a group of 290 persons inoculated with this vaccine, 218 (70 per cent) developed symptoms and serological manifestations of typhus fever. There was 1 fatality. Although the period of incubation ranged from 7 to 24 days, many cases developed the disease within a 16-17 day period.

The dangers of the use of living typhus vaccine are briefly presented and note is made of the favorable results which have been recently obtained against epidemic typhus by the use of a killed ether extracted yolk sac vaccine.

#### REFERENCES

1. Biraud, Y. The Present Menace of Typhus Fever in Europe and the Means of Combatting It. *Bull. Health Organ, League of Nations*, 10:3, 1943.
2. Editorial. The Menace of Typhus in Europe. *J.A.M.A.*, 122:376, 1943.
3. Cox, H. R., and Bell, E. J. Epidemic and Endemic Typhus: Protective Value for Guinea-pigs of Vaccines Prepared from Infected Tissues of the Developing Chick Embryo. *Pub. Health Rep.*, 55:110, 1940.
4. Craigie, J. Application and Control of Ethyl-ether-water Interface Effects to the Separation of Rickettsiae from Yolk Sac Suspensions. *Canad. J. Research*, E, 23:104, 1945.
5. Sadusk, J. F., Jr. Typhus Fever in the U. S. Army Following Immunization: Severity of the Disease, Modification of the Clinical Course, and Serological Diagnosis. To be published.
6. Gold, H. and Fitzpatrick, F. Typhus Fever in a Previously Vaccinated Laboratory Worker. *J.A.M.A.*, 119:1415, 1942.
7. Van den Ende, M., Stuart-Harris, C. H., Harries, E. H. R., Steigman, A. J., and Cruickshank, R. Laboratory Infection with Murine Typhus. *Lancet*, 1:328, 1943.
8. Topping, N. H. Typhus Fever. A Note on the Severity of the Disease among Unvaccinated and Vaccinated Laboratory Personnel at the National Institute of Health. *Am. J. Trop. Med.*, 24:56, 1944.
9. Ecke, R. S., Gilliam, A. G., Snyder, J. C., Yeomans, A., Zarafonitis, C. J., and Murray, E. S. The Effect of Cox-type Vaccine on Louse-borne Typhus Fever. An Account of 61 Cases of Naturally Occurring Typhus Fever in Patients Who Had Previously Received One or More Injections of Cox-type Vaccine. *Am. J. Trop. Med.*, 25:447, 1945.
10. Nicolle, C. Essai de vaccination préventive

dans le typhus exanthématique. *Compt. rend. Acad. d. sc.*, 163:38, 1916.

11. Weil, E., and Breinl, F. Untersuchungen über die experimentelle Fleckfieberinfektion und-immunität. *Ztschr. f. Immunitätsforsch. u. exper. Therap.*, 37:441, 1923.

12. Nicolle, C., Sparrow, H., and Conseil, E. Vaccination préventive de l'homme contre le typhus exanthématique par emploi de petites doses virulentes répétées (cerveau de cobaye). *Compt. rend. Acad. d. sc.*, 184:859, 1927.

13. Balteanu, I. and Constantinesco, N. Essais de vaccination contre le typhus exanthématique à l'aide du virus historique enrobé dans l'huile. *Bull. Acad. de med. de Roumanie*, 2:289, 1937.

14. Combesco, D. Virus du typhus exanthématique épidémique (historique) en exipient gras. *Compt. rend. Soc. de biol.*, 124:483, 1937.

15. Blanc, G. Histoire et enseignements d'une vaccination contre le typhus exanthématique faite à Petitjean (Maroc). *Rev. d'Hyg.*, 58:252, 1936.

16. Blanc, G. and Baltazard, M. Longue conservation à sec du virus du typhus murin dans les déjec-

tions de puces infectées. *Compt. rend. Acad. d. sc.*, 201:1046, 1937.

17. Blanc, G. La vaccination contre le typhus exanthématique par virus vivant. Son application au Maroc. *Rev. d'Hyg. et de med. prev.*, 61:593, 1939-40.

18. Nicolle, C. and Laignet, J. Vaccination contre le typhus exanthématique par le virus typhique vivant desséché et enrobé. *Compt. rend. Acad. d. sc.*, 201:372, 1935.

19. Nicolle, C. and Laignet, J. Vaccination contre le typhus exanthématique à l'aide du virus typhique vivant desséché et enrobé. *Arch. Inst. Pasteur de Tunis*, 25:40, 1936.

20. Laignet, J. and Durand, R. La vaccination contre le typhus exanthématique. Nouvelle technique de préparation du vaccin: emploi des cerveaux de souris. *Bull. Acad. de med.*, 122:84, 1939.

21. Murgatroyd, F. A review of immunization against human rickettsial diseases. *Tr. Roy. Soc. Trop. Med. & Hyg.*, 34:1, 1940.

22. Dyer, R. E. The Menace of Typhus in Europe. *J.A.M.A.*, 122:828, 1943.

## Medical Fellowships for Women

The American Association of University Women announces a series of research or graduate study fellowships for 1947-1948. Seventeen national and 8 international fellowships are announced, each carrying a stipend of \$1,500. A special achievement award of \$2,500 is also announced.

In general the fellowships are awarded

to women candidates who have completed two years of residence work for the doctor's degree or have already received the degree.

For detailed information address the Secretary, Committee on Fellowship Awards, American Association of University Women, 1643 I Street, N.W., Washington, D. C.

# Place of the Entomologist in Public Health\*

THEODORE A. OLSON

*Assistant Professor, School of Public Health, University of Minnesota,  
Minneapolis, Minn.*

IN February, 1945, General Simmons in reviewing recent advances in that branch of preventive medicine which deals with arthropod-borne diseases said, "The United States Army is now carrying on two total wars; one against the Axis, the other against the insects which transmit disease." Civilian health authorities too are becoming increasingly aware of the importance of these diseases and their potential dangers. As a result the literature has been enriched during the past few years by manifold contributions dealing with civilian as well as military problems relating to the arthropod-borne diseases. These papers have dealt with subjects ranging from the virus encephalitides to filariasis, and constitute a vast but incomplete body of information which must be subjected to critical reading and interpretation. A statement concerning advances made in the understanding or control of each disease or type of disease now known is not within the scope of this discussion; however as an example of the kind of progress which is occurring, a brief review may be made of some of the advances in our knowledge of arthropod-borne virus diseases.

The virus of the St. Louis type encephalitis, for instance, has now been isolated from naturally infected *Culex tarsalis*, *Culex pipiens*, and *Aedes dorsalis* mosquitoes caught in California.

The common dog tick, *Dermacentor variabilis* Say, has been infected with the Hubbard strain of this virus when fed on infected animals. It has been found further that this arthropod can transmit the infection to susceptible animals and the female tick can pass on the virus through all stages of the 2d generation into the 3d generation. In connection with our search for a true reservoir or overwintering mechanism it is interesting to note that Smith, Blattner, and Heys, working at St. Louis have isolated the virus from chicken mites (*Dermanyssus gallinae*) taken in a chicken coop during a non-epidemic period. Transovarial transmission of the pathogen to offspring has also been demonstrated for this mite.

Western type equine encephalomyelitis virus has now been isolated from naturally infected *Culex tarsalis* 75 times, and from mosquitoes taken in three widely separated states (Washington, California, and Nebraska). In addition five other species have been found naturally infected. They are *Aedes dorsalis*, *Culex stigmatosoma* Dyar, *Culex pipiens*, *Culiseta inornata* Will, and *Anopheles maculipennis freeborni* Aitken. In all, 13 species of mosquitoes have been shown capable of experimental transmission, indicating that the vector possibilities are great. Sulkin has recently reported chicken mites to be naturally infected with this virus. Syverton and Berry were able to infect the tick *Dermacentor andersoni* Stiles and show transfer to progeny. However,

\* Presented before the Victory Meeting of The Public Health Association of New York City in collaboration with the American Public Health Association, New York, N. Y., December 13, 1945.

naturally infected ticks have not been found even in epizootic areas.

Other encephalitides including the eastern equine, the Russian spring and summer, the Venezuelan and the Japanese "B" types, according to Hammond and Reeves, deserve serious consideration as a potential danger to this country. The concern over the Japanese "B" virus for instance is based on the high case fatality rate of 42-75 per cent which often characterizes the disease and on the knowledge that 6 species (3 genera) of California mosquitoes can transmit it. Once introduced, this Japanese virus might easily constitute a greater danger to our population than the types we now have.

The growing list of neurotropic viruses which affect man and animals has been further augmented by recent reports of new insect-transmitted viruses from Kern County, California, Colombia, South America, and from Uganda, Africa. There is evidence, therefore, that there are a number of arthropod-borne viruses yet to be discovered and that these may be of world-wide distribution and importance.

Recent studies of other arthropod-transmitted diseases such as scrub typhus, Bullis fever, relapsing fever, jungle yellow fever, and of the classic long known diseases such as malaria, typhus, and plague, are deserving of mention but are too voluminous to abstract here.

From a medical standpoint it may be said that many species of arthropods provide a constant menace and that the conquest of several of the most deadly and disabling human diseases depends on the success with which the control of the arthropod transmitters of these diseases may be accomplished. The effectiveness of control is in each instance usually directly proportional to the knowledge we have concerning the life history, ecology, physiology, distribution, etc., of the arthropod involved.

In the case of malaria for instance, although it has been a major scourge since ancient times, rational methods of control have been possible only during the last few decades.

The phylum *Arthropoda* contains over 700,000 species. This is more than 75 per cent of all the animal kinds now known. Many of the species are furthermore enormously abundant as individuals. As many as 5,000 chinch bugs per square foot may frequently be found in favorable hibernating quarters. In one instance 28,000 specimens of the tropical rat mite (*Liponyssus bacoti*), an ectoparasite of rodents and a potential carrier of murine typhus, were taken from the body of a hamster (personal observation). Insects alone, under more average conditions, have been variously estimated as occurring on or in the soil at the rate of 1,000,000 to 65,000,000 per acre. H. Elliot McClure concluded from extensive trapping experiments that on the average in the morning 3,000 and in the evening 11,000 insects may be found in flight over an acre tract.

The reproductive capacity of many species is very high and is well illustrated by Hodges' calculation of the biological potential of houseflies. One pair of flies beginning operations in April might by August, if all young survived, be the progenitors of a sufficient number of offspring to cover all the earth to a depth of 47 feet (based on  $\frac{1}{8}$  inch cube space per fly). Fortunately a large number of natural forces are constantly at work opposing phenomenal increases, and such theoretical extremes are actually never reached. An occasional breakdown in some factor of environmental resistance may, however, permit a temporary spurt in reproduction and a brief appearance of large numbers.

Arthropods are ubiquitous; members of the group occur at altitudes of 20,000 feet on mountains and to depths of

18,000 feet in the sea. Different species are adapted to live in the air, on land or in soil and in fresh, brackish, or salt water. Some are parasitic on plants or animals, others are free living. Some are colonial, others are solitary in their habits. Few environments are entirely unsuited to all members of the group.

The eminent success demonstrated by insects and their allies in surviving unfavorable conditions and in rapidly reaching a high numerical level when environmental factors permit, makes them even more dangerous as vectors or reservoirs of disease.

Probably because of these diverse adaptations to various modes of living and, when needed, to survival or rapid increase, the phylum has become the largest in the animal kingdom with more species than all others combined.

Although a knowledge of all phases of the biology of a vector or reservoir should be known, the importance of accurate identification can scarcely be overemphasized. The matter is self-evident and little need be said in its support when as in the case of anophelines, one species may be a demonstrated and dangerous vector of malaria, while another although closely allied is relatively harmless. Much loss of life or, on the other hand, loss of money and effort in superfluous control, might well be the consequence of erroneous identification.

In so diverse and large a group of organisms as the *Arthropoda* mistakes can easily be made, especially by those not specifically trained in taxonomy. Even the expert must use care. One of the most striking examples of misidentification is that of our much publicized and dangerous malaria vector *Anopheles gambiae* Giles.

This species as taken in Africa was known widely and recorded in literature as *Anopheles costalis* Loew until it was discovered that originally there had been a misidentification

and that the name *A. gambiae* actually applied.

Another case in point is the confusion existing between *Anopheles rossi*, *A. subpictus*, and *A. vagus*. The name *A. rossi* has been applied to both *A. subpictus*, with which it is identical, and to *A. vagus*. Past records of *A. rossi* cannot, therefore, be trusted to refer to *A. subpictus* except where it can be shown that they come from an area where *A. vagus* never occurs.

Other species than mosquitoes are also subject to confusion. Early Indian plague investigation reports implicated *Pulex pallidus*, a flea not normally an ectoparasite of rats. Subsequent investigations indicated that instead of the one reported, there were in reality three other species of fleas *Xenopsylla cheopis*, *X. brasiliensis*, and *X. astia*.

The arthropod group is so large and varied an aggregation of organisms and each individual species may react to its environment in such a diverse and often complex way that an intimate knowledge of even a moderate number of these forms can scarcely be available to anyone but the trained entomologist or arachnologist. For this reason it is not to be expected that the family physician, the epidemiologist, the bacteriologist, or the public health engineer working alone can solve the problems relating to the exact knowledge of transmission mechanisms or preventive measures in any given type of arthropod-borne disease. On the contrary, only with the full coöperation of all these and the added services of the medical entomologist can full success be attained. The latter specialist is an individual who through long years of training and experience has acquainted himself with the best available knowledge concerning insects and other arthropods which may be potential disease carriers. A knowledge of control methods and research techniques is also a part of his "stock in trade."



Past experience has indicated that the specialized insight and guidance of an entomologist is essential to an exacting study of arthropods in their relation to disease. His work complements that of the other specialists and the result is a unified effort free from the pitfalls which frequently confront those who have ignored the source of knowledge he represents.

Unfortunately, too few health organizations have availed themselves of this

type of service. It would appear that each state health department and many municipal or county health organizations could utilize at least one entomologist at the present time.

If present trends continue, there will be a fuller recognition of the contributions which the entomologist can make to the solution of present and future problems in public health, and the need for this type of service will soon be much greater.

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## Pepper-Neely Bill for Cancer Research Defeated

"The atomic bomb became a reality because of sufficient funds, sufficient man power, every available expert, and then planned coördinated research. This bill proposes the same planned, coördinated research in a supreme endeavor to discover means of curing and preventing cancer. Seventeen million Americans who are doomed to suffer and die of cancer are entitled to this research."

With these words Representative Matthew W. Neely (W. Va.) introduced a bill authorizing expenditures of \$100,000,000 to mobilize scientists in cancer research. H.R. 4502, as S. 1875, was introduced in the upper chamber by Senator Claude Pepper of Florida. The bill was reported upon favorably by the Foreign Affairs Committee of both the House and Senate. When brought to a vote in the House, however, it was defeated. The Senate adjourned before the bill was brought to a vote.

The bill called for the appropriation to enable the President "to undertake,

in whatever manner he may deem most appropriate, to mobilize at some convenient place in the United States an adequate number of the world's outstanding experts, and coördinate and utilize their services in a supreme endeavor to discover means of curing and preventing cancer; and to take any additional action that he may consider necessary or proper to achieve the desired result." It is understood that the President planned to avail himself of the services of the National Research Council in selecting these experts and developing a program.

The bill did not specify a particular agency through which the proposed cancer research must function. It might, therefore, have been set up as a new agency outside the National Cancer Institute of the U. S. Public Health Service. Representative Alfred L. Bulwinkle made strenuous objections to the bill on the ground that it was badly drawn in setting up an independent national cancer agency.

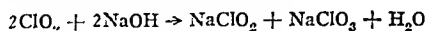
# The Use of Chlorine Dioxide in Water Treatment\*

G. P. VINCENT, J. D. MACMAHON, AND JOHN F. SYNAN

*The Mathieson Alkali Works (Inc.)*

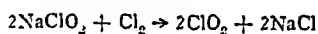
ELIMINATION of unpleasant tastes and odors in municipal water supplies is a well known problem to those concerned with water treatment. This problem is now being solved by the use of chlorine dioxide in a number of cities where phenolic wastes or algae were the cause of unpalatable water.

Chlorine dioxide is a yellow to red gas at ordinary temperatures, with a vapor density of about 2.4. It liquefies at 10° C. and atmospheric pressure. It has an unpleasant odor, which becomes noticeable when it reaches a concentration of 15 parts of chlorine dioxide per million parts of air, and becomes irritating at 45 p.p.m. It is soluble in water to the extent of 2.8 grams per liter at room temperature and 30 mm. partial pressure. At elevated temperatures it decomposes into its elements with explosive violence. Its aqueous solutions are decomposed by light, forming perchloric and chloric acids and oxygen. In alkaline solutions, chlorite and chlorate are formed:



The most interesting property of chlorine dioxide is its remarkable oxidizing power. On a weight basis, expressed in terms of available chlorine, it has, theoretically,  $2\frac{1}{2}$  times as much oxidizing capacity as chlorine.

Until recently the valuable properties of chlorine dioxide could not be applied commercially. Because of its instability it cannot be stored or shipped, but must be prepared at the point of use, in quantities as desired. When sodium chlorite,  $\text{NaClO}_2$ , was made commercially available a few years ago, however, it provided a new source of chlorine dioxide which is generated by reaction of sodium chlorite with chlorine:



## CHLORINE DIOXIDE IN WATER TREATMENT

When it was proved possible to produce chlorine dioxide safely in controlled amounts for various commercial applications, investigations were begun concerning its use in water treatment. Because of its unusual oxidizing capacity, it was suggested that chlorine dioxide might be effective in improving tastes in water supplies where chlorine treatment failed.

The first problem to be investigated was the effect of chlorine dioxide on waters contaminated with phenolic wastes. It is well known that the addition of chlorine to such water intensifies the unpleasant odors and tastes because the chlorine reacts with the contamination to produce "chlorophenols." Laboratory experiments have demonstrated that chlorine dioxide, on the other hand, does not chlorinate these compounds, but instead, destroys them, thus avoiding tastes and odors. In addition,

\* Condensed from a paper presented by G. P. Vincent in the Inservice Training Course for Water Works Personnel conducted at the University of Michigan School of Public Health.

TABLE 1

*Pretreatment with Chlorine Followed by Chlorine Dioxide \**

No.	Phenol Added (p.p.m.)	Chlorine Pretreatment (p.p.m.)	Chlorine Dioxide Post-treatment (p.p.m.)	Post- Chlorine	Taste †
1	0.08	1.0	...	....	xx
2	0.08	1.6	...	....	xx
3	0.08	1.0	0.1	....	x
4	0.08	1.0	0.2	....	x
5	0.08	1.0	0.4	....	0
6	0.08	1.0	0.6	....	0
7	0.01	1.5	...	....	xxx
8	0.01	1.5	0.5	....	0
9	0.01	1.5	0.5	....	0
10	0.01	1.5	0.5	0.15	0
11	0.01	1.5	0.5	0.40	0
12	0.08	1.5	...	....	xxx
13	0.08	1.5	0.5	....	0
14	0.08	1.5	0.5	....	0
15	0.08	1.5	0.5	0.15	0
16	0.08	1.5	...	....	xxx
17	0.08	1.5	0.5	....	0
18	0.08	3.0	...	....	xxx
19	0.08	3.0	0.5	....	0

\* The water used was raw water, taken from the Niagara River at the intake of the No. 2 filter plant. Before use it was treated with 17 p.p.m. alum, settled for 2 hours and filtered.

† Taste, after the water was allowed to stand overnight, was evaluated by five judges, using the following "code" to record their findings:

No chlorphenol — 0  
Slight chlorphenol — x  
Bad chlorphenol — xx  
Very bad chlorphenol — xxx

The degree of "break point" was determined by electrometric titrations for available chlorine.

chlorine dioxide destroys tastes and odors already developed by chlorination.

The laboratory tests were run on both distilled and raw water, to which measured amounts of phenol were added. It was shown that, even in cases where chlorine failed and no "break point" occurred, chlorine dioxide in dosage of 0.5 p.p.m. was sufficient to destroy all tastes and odors encountered in this work.

The raw water was taken from the Niagara River at the intake of No. 2 filter plant of the City of Niagara Falls. Before use it was treated with 17 p.p.m. alum, settled for 2 hours, and filtered. Chlorine was added as chlorine water made up to a concentration of 100 p.p.m. available chlorine.

Chlorine dioxide, generated from a solution of sodium chlorite and sulfuric acid, was added as a chlorine dioxide solution made up to a concentration of

100 p.p.m. The generated chlorine dioxide was blown out with air and dissolved in distilled water.

Since it was necessary to combine the use of chlorine for disinfection with chlorine dioxide for elimination of tastes and odors, another set of experiments was run to determine the most satisfactory procedure to be followed. These experiments demonstrated that pre-chlorination, followed by treatment with chlorine dioxide, was the most feasible method (see Table).

Chlorine dioxide was found to be equally effective in the treatment of algae contamination. It was found that chlorine dioxide reacts completely and rapidly with such organic matter, leaving a taste-free palatable water.

One of the most difficult problems in water treatment has been the maintenance of active chlorine residuals in the distribution system. This results

from the presence of organic material which is destroyed very slowly by chlorine. Such material gets through into the mains, where it slowly reacts with the chlorine, thus destroying the chlorine residual. There is some evidence that chlorine dioxide aids in maintenance of residual chlorine.

#### GENERATING CHLORINE DIOXIDE FOR WATER TREATMENT

For water treatment the method of generating chlorine dioxide is based upon the reaction of chlorine with a solution of sodium chlorite. The chlorite solution and the chlorine water are fed continuously into a reaction chamber, and the resulting solution is fed into the water system.

As applied in water supply plants today, the installations employ W & T chlorinators to supply the stream of chlorine water. The discharge line of the chlorinator is connected to one end of the chamber into which the sodium chlorite solution is fed by means of a metering pump. The purpose of the chamber is to insure complete mixing of the chlorine and chlorite and complete reaction of the chlorite to chlorine dioxide before it is discharged into the water supply. The main portion of the reaction chamber is a 4 inch glass pipe, 12 inches long, filled with unglazed porcelain Raschig rings. This is reduced at the lower end to a 1 inch pipe for chlorine inlet, and similarly at the top for the chlorine dioxide outlet. The chlorite is fed through a T-tube at the lower end of the chamber.

There is considerable latitude in the operation of the generator, the major consideration being the completeness of the reaction to chlorine dioxide. For this purpose the minimum proportion of chlorine to chlorite for efficient operation should usually be at least 50 per cent, and preferably 100 per cent, above the theoretical. Since the theoretical ratio in terms of available

chlorine is 1 part of chlorine to 4 parts of chlorite, the recommended ratio is not less than 1:2.66, and preferably 1:2. In terms of actual commercial products used, as technical sodium chlorite contains approximately 82 per cent  $\text{NaClO}_2$ , a ratio of at least 1 lb. of chlorine is used for every 2 lbs. of chlorite, and preferably for every 1 lb. of chlorite.

Efficient reaction is obtained as long as a sufficient excess of chlorine is used, even with the pH at 5. When the chlorine is fed at or below theoretical proportions, however, the efficiency of the reaction is reduced and a considerable part of the chlorite remains unconverted to chlorine dioxide.

For practical application to water supply systems, the concentration of the chlorite solutions may be varied to meet the requirements of individual plants. Laboratory and field work indicate that satisfactory conditions result from use of not less than 1.6 grams per liter of available chlorine as chlorite with 50-100 per cent excess chlorine. As long as these proportions are maintained, some dilution below this concentration is possible without seriously impairing the efficiency of the reaction, provided the pH of the chlorine water is sufficiently low.

As the concentration of chlorine decreases, the pH of the water tends to rise. At pH values of 5.5 or above, with very low concentrations of reactants, poor yields of chlorine dioxide are obtained. A four- or five-fold dilution from the concentrations described above will give a satisfactory yield at pH 5, but the chlorine dioxide will decrease sharply if the pH goes above that point. Ordinarily, very low concentrations would not be used in water treatment. If, however, a case should arise where it might be desirable to use them, the water in the generator would have to be buffered to a pH value of 5 or below in order to obtain satisfactory reaction.

## Institutions Accredited by the American Public Health Association to give the Degree of Doctor of Public Health for the Academic Year 1946-1947

This list is released by the Executive Board of the American Public Health Association as of July 8, 1946, and considers those institutions from which requests for accreditation had been received to that date. Additional applications will be acted upon in due course.

The criteria governing accreditation for the academic year 1946-1947, as approved by the Committee on Professional Education of the American Public Health Association on June 14, 1946, and by the Executive Board on July 8, 1946, follow the listing.

Columbia University School of Public Health  
Harvard University School of Public Health  
The Johns Hopkins University School of Hygiene and Public Health

University of Michigan School of Public Health

Yale University School of Medicine, Department of Public Health

### MINIMUM REQUIREMENTS FOR INSTITUTIONS TO BE ACCREDITED FOR THE DEGREE OF DOCTOR OF PUBLIC HEALTH \*

Adopted by the Committee on Professional Education of The American Public Health Association, June 14, 1946.

#### *The Institution*

*Criteria 1-7.* Identical with those for the M.P.H. degree.†

#### *The Course*

*Criterion 8.* Candidates to be matriculated for the degree of Dr. P.H.

shall, for the most part, hold the degree of M.D.; although in exceptional cases, holders of other doctoral degrees or those having equivalent preliminary professional training or experience may be accepted.

*Criterion 9.* The candidate for Dr.P.H. must complete—or must already have completed—basic courses equivalent to those required for the degree of M.P.H. by the university in which such student matriculates for the Dr.P.H.

*Criterion 10.* The candidate, in addition to fulfilling criteria 8 and 9, must complete a minimum of one academic year of work in residence at the university; involving advanced specialization in the particular area of public health for which the student is preparing. The period should be at least 2 years for those who do not hold prior doctoral degrees.

*Criterion 11.* The candidate must indicate capacity to make substantial contribution to the advancement of the science and art of public health by submitting a dissertation based on original research satisfactory to the authorities of the university.

*Criterion 12.* The candidate must

\* These criteria will govern accreditation for the academic year 1946-1947. They may be modified for application after that date; and, in some respects, to be made more stringent changes the aim of the committee to communicate nine months before the beginning of any academic year.

† Published in the March, 1946, *Journal*.

demonstrate ability for practical leadership in his field, as well as for advancement of scientific knowledge. This may be indicated either

- a. by prior successful professional experience in a post involving the exercise of substantial initiative and responsibility or

- b. by demonstration of the qualities of leadership in such a way as the school may define.

NOTE: After 1946-1947 it is hoped that the Committee on Professional Education can secure sufficient information to formulate a more precise definition of this alternative.

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## Do We Need a Specialty Board in Public Health?

The Committee on Professional Education wants answers to this question. *A News Letter* to the membership dated July 8 included the following:

"The Committee on Professional Education has devoted many hours at recent meetings in considering the arguments for and against the establishment of a specialty board for the purpose of recognizing physicians specializing in public health. The advantages and disadvantages of such a board, as the Chairman of the committee sees them, were stated by him at a meeting on June 14. Dr. Shepard said, 'The advantages would be the recognition of public health as a distinct specialty in medicine; recognition of public health physicians by fellow physicians as specialists; and a salutary effect on salaries both in governmental and civilian services. The disadvantages would be that specialty boards organized under A.M.A. auspices must be self-supporting and the examinations are therefore costly; the specialty board examination patterns are frequently inadequate and unsatisfactory; and there might be too great discrimination between public health physicians so certified and those who are not.'

"Inasmuch as 47 per cent of the Fellows and 36 per cent of the entire membership of the Association are graduates in medicine, the committee concluded that exploration of the desire of the membership was definitely indicated. It voted to endorse the idea in principle and to consult with the Sections of the Association in which graduates in medicine are numerous.

"There will shortly be sent to the members of the Health Officers, Epidemiology, and Maternal and Child Health Sections a memorandum asking for expressions of opinion as to the need of a specialty board in public health. Dr. Shepard would welcome comment now from any member. Letters addressed to him at the New York office will be forwarded."

A number of interesting communications have been received as a result of this, to all of which Dr. Shepard is giving his careful attention. Graduates in medicine are urged to contribute to the discussion. Their opinions are important and will dictate the next steps to be taken.

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## HOW MANY FOOT CANDLES?

THE problem of artificial illumination is of primary importance in the sanitation of occupied spaces. Adequate light conduces materially to comfort and efficiency in the duties and avocations of daily life; and faulty illumination causes eyestrain which may be accompanied by reflex functional disturbances of many other organs of the body. Sound standards for artificial lighting are therefore essential tools for the sanitarian, whether he is working in the school, the home, the office, or the factory.

The leadership of the Illuminating Engineering Society in preparing standards of lighting for various types of occupied spaces was therefore welcomed by the public health profession. During the past quarter-century, this organization—often in coöperation with the American Institute of Architects, and, usually, under the rules of procedure of the American Standards Association—has issued a large number of codes of Recommended Practise for Lighting.

These codes have added materially to our knowledge of this subject; and in relation to color of light, distribution of light and brightness contrast they are fundamentally sound. Prior to 1940; they were practical and helpful with regard to intensity of illumination. The code on School Lighting prepared in 1938, for example, called for 15 foot candles for classrooms, shops, and offices, 25 for sewing and drafting rooms and 30 for sight-saving classes. These standards are reasonable and are supported by adequate evidence. Since 1940, however, under the leadership of Matthew Luckiesh of the Nela Park Laboratories at Cleveland, there has been an extraordinary and progressive tendency to increase these standards so that with every report the minimum levels rise; and, beyond the minima set, it is suggested that still more astronomical intensities would really be desirable. Twenty-five to 50 foot candles are specified for average visual tasks, 100 foot candles or more for severe and prolonged visual work, and hundreds and even thousands of foot candles are indicated as desirable in certain cases.

Sanitarians have generally viewed these extravagant standards with justified suspicion. As long as J. E. Ives of the U. S. Public Health Service was alive, we always turned to him for counsel since, though he was a physicist, he understood physiology. Since his death we have turned to the psychologists as

our best guides; and we are fortunate in presenting as the Special Review Article of this issue a thoroughgoing analysis of the whole subject by the outstanding leader in this field, M. A. Tinker, of the University of Minnesota.

In this article, Dr. Tinker analyzes the evidence presented by Luckiesh and his associates in support of their high demands. He shows how the physicists have treated light intensity as a purely quantitative factor, almost as if when a certain intensity proved good, more was necessarily better. They have ignored the fact that the human eye is an adaptive instrument and that preference at a given moment is a function of prior adaptation; not of permanent comfort. They have confused threshold visibility, which is chiefly physical, with ease of reading above the threshold, which is quite a different problem. They have wholly omitted a consideration of the glare effect incidental to very high illumination. Above all—and this seems inexcusable for physicists—they have paid no attention at all to the shape of the curve of visibility and of visual performance. This curve (as shown by Ives many years ago for letter-sorting in the U. S. Post Office) rises rapidly with increase in illumination and then levels off to almost a straight line. Luckiesh computed that it would take 30 foot candles to make newspaper text matter equivalent in visibility to 8-point book type under 10 foot candles illumination; on the other hand, Tinker found that no improvement in reading performance with newspaper type actually resulted with increases beyond 7 foot candles. Lythgoe has found that, under certain conditions, visual acuity continues to increase up to 1,000 foot candles; but the inflection of the curve is at 10 foot candles and increase above 20 foot candles is slight. Actually, Tinker concludes that the critical levels of illumination for different visual tasks vary from 3 foot candles for reading large print to 30 for threading a needle; and that to allow an adequate margin of safety, standards for various activities might range from 10 to 50 foot candles; but not above.

The whole problem is strikingly reminiscent of the controversy of some decades ago with respect to school ventilation. In that field, too, the engineers called for standards (30 cubic feet per minute) which were shown to be excessive by physiological research; and, in view of accumulating evidence, the American Society of Heating and Ventilating Engineers changed its standards to conform to real human needs. The Illuminating Engineering Society should exhibit similar readiness to follow the truth. As Tinker points out, satisfactory results can only be attained by "coördinating the work of engineers, physiologists, and psychologists." Until such coördination is effected, we shall do well to follow the psychologists, since it is human health and comfort which is at stake.

## A MAGNA CARTA FOR WORLD HEALTH

THE International Health Conference which met in New York City on June 19, under the chairmanship of Dr. Thomas Parran, concluded its deliberations on July 22. Its discussions were based on the report of a Technical Preparatory Committee which met in Paris between March 18 and April 5. They were conducted with singleness of scientific purpose and in a spirit of mutual coöperation. The Conference achieved signal success and unanimously adopted a Constitution for the New World Health Organization which, as Dr. Parran said at the closing session, is a veritable Magna Carta for world health.

This conference was unique, not only for its harmony and constructiveness, but for several other reasons as well. It was the first general international Con-



ference formally convened under the aegis of the United Nations. Other organizations such as UNESCO, the Food and Agriculture Organization and the World Bank were autonomously established, although they will be affiliated with the UN. The Health Conference, however, was called under a vote of the Economic and Social Council of February 15, 1946, based on a formula proposed jointly by Brazil and China at San Francisco. It is also the first conference to which neutral states, not members of the UN, have been invited as observers. Finally, it is the first of the special technical organizations in which all the three states of the Soviet Union represented in the UN have participated actively. Fifty-one members of the UN had delegates in New York, with 13 more from non-member states (including Austria, Bulgaria, Hungary and Italy) as observers.

The Final Act of the Health Conference included approval of the Constitution of the World Health Organization and the establishment of an Interim Commission consisting of the representatives of 18 member states to convoke a World Health Assembly within six months. This Assembly will determine the permanent location of the WHO and appoint its Director-General; but the Interim Commission is to proceed at once with the appointment of an Executive Secretary and of an expert staff; with the preparation of detailed agenda for the Assembly; with the negotiation of agreements with the UN and other organizations, specifically providing for the assumption of the responsibilities of the Health Section of the League of Nations, the Office Internationale d'Hygiène Publique, and certain health functions of UNRRA; and with direct service in connection with any urgent health problems which may arise in the period before the Assembly meets. Thus, the World Health Organization is already in existence. The delegates of 61 countries signed the conventions in New York, in most cases subject to formal ratification by their governments. Members of the UN may become members by signing, "or otherwise accepting this Constitution," at any time. The states represented as observers in New York may automatically become members by acceptance prior to the first session of the Health Assembly. Other states (presumably Germany, Japan, and Spain) may apply, but will require a majority vote of the Assembly for admission. Thus, the WHO is a far wider world organization than it has been possible to create in any other field.

In its scope of activities, too, the WHO is admirably broad. Its Constitution defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." It states that "The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition." The Organization will specifically "foster activities in the field of mental health, especially those affecting the harmony of human relations." It will not—as has been proposed in certain quarters in the United States—take the fantastic step of excluding medical care from the field of health. It specifies that a fundamental function of the WHO is "to study and report on, in coöperation with other specialized agencies where necessary, administrative and social techniques affecting public health and medical care from preventive and curative points of view, including hospital services and social security." The Constitution recognizes responsibilities for promoting "the improvement of nutrition, housing, sanitation, recreation, economic working conditions" and other aspects of environmental hygiene. It notes the importance of "developing an informed public opinion among all peoples on matters of health." It proposes to "promote and conduct research in the field of health by personnel of the

Organization, by the establishment of its own institutions or by coöperation with official or non-official institutions of any Member with the consent of its government."

The Organization will "act as the directing and coördinating body on international health work." It will have authority to adopt regulations, with respect to sanitary and quarantine requirements designed to prevent the international spread of diseases, as to nomenclature of diseases and causes of death, and as to standards for biological and pharmaceutical products. These regulations will come into force for all Member States except those which reject them, or vote reservations in regard to them, within a specified period. The Organization will establish administrative and technical services (including statistical and epidemiological services) as may be required. Furthermore, it will "assist governments upon request, in strengthening health services" within their respective states. It is of special importance that the Organization is not limited to action through the Social and Economic Council. It "shall have authority to make recommendations to Members with respect to any matter within the competence of the Organization"; and the Director-General may establish direct relationships with the health organizations of Member States which permit such contact. Under the Constitution, all Member States agree to report annually to the Organization any action taken in improving the health of its people (with particular respect to recommendations made by the Organization): to provide data on health regulations and statistics pertaining to health published within the State; and to furnish such statistical and epidemiological data as may be called for by the Health Assembly.

The WHO will include three major organs, the Health Assembly, the Executive Board, and the Secretariat. The Assembly will meet at least once a year and will include three delegates (qualified by technical competence and preferably representing the national health administration) from each member state. The Assembly will determine general policies, name the Member States entitled to designate the members of the Executive Board, and appoint the Director General. It will supervise the financial policies of the Organization, and establish its budget. The Board, of 18 persons serving for terms of three years, will meet at least twice a year and will act as the executive organ of the Assembly, taking on its own initiative any steps necessary to deal with epidemics and to participate in disaster relief. It will prepare the agenda for the Assembly and offer to the Assembly its recommendations as to the program of the Organization. The Director-General will appoint the staff of the Secretariat and serve as the chief technical and administrative officer of the Organization.

The budget will be prepared by the Director-General and approved by the Board. Subject to agreement with the United Nations, the budget will be finally approved by the Assembly and the expenses apportioned among the Member States. The Organization will be "brought into relation with the United Nations as one of the specialized agencies referred to in Article 57 of the UN Charter." The Organization may coöperate with non-governmental international organizations and (with the consent of the governments concerned) with national organizations, both governmental and non-governmental. By a two-thirds vote of the Health Assembly, it may take over the functions and obligations of any other international agency in the health field. The assumption of the work of the Health Section of the League and of the Paris Office was specifically provided for by action taken at New York.

One of the most important elements in the program is the provision for the establishment, within geographical areas determined by the Assembly, of Regional Organizations, as integral parts of the parent body. Each such area (after the approval of a majority of the Members in that area) will have its own Regional Committee and Regional Officers. The Director of the Regional Office will be appointed by the Board in agreement with the Regional Committee. In connection with this part of the Constitution, the New York Conference faced one of its most difficult problems. The Pan American Sanitary Bureau, under the able leadership of Dr. Hugh S. Cumming, has had a long and distinguished history of achievement in the field of regional coöperation for the promotion of public health. On the other hand, it would be clearly impossible to recognize an autonomous organization of this type in one area alone. An independent Pan American Sanitary Bureau would be supplemented by an independent Pan European Sanitary Bureau, an independent Pan Slavic Sanitary Bureau, a Pan Asiatic Sanitary Bureau; and the entire conception of a World Health Organization would dissolve in chaos. The Conference handled this thorny question in Article 54 of its Constitution which reads as follows: "The Pan American Sanitary organization represented by the Pan American Sanitary Bureau and the Pan American Sanitary Conference, and all other inter-governmental regional health organizations in existence prior to the date of signature of this Constitution, shall in due course be integrated with the Organization. This integration shall be effected as soon as practicable through common action based on mutual consent of the competent authorities expressed through the organizations concerned." This was in principle a sound and statesmanlike treatment of the problem; it is most essential, however, that its detailed solution should be worked out promptly and in accordance with the vital necessity that all special and local interests should be merged in a world-wide system of health promotion.

The New York Health Conference was, perhaps, the most heartening demonstration of international solidarity which has emerged in this difficult post-war period. Its spirit was altogether admirable in the coöperation displayed in furthering the progress of science and the advancement of the welfare of mankind. The Constitution itself is a model of thoroughness and clarity. As Dr. Parran said at the closing session, the World Health Organization "is a collective instrument which will promote physical and mental vigor, prevent and control disease, expand scientific knowledge and contribute to the harmony of human relations. In short, it is a powerful instrument forged for peace."

In our whole-hearted satisfaction with the structure erected at New York, it would be ungracious to forget those who laid the foundations for this structure in the past. The Health Section of the League of Nations had much the same machinery now proposed. The Office Internationale functioned in a sense as its Assembly. The Health Committee of the League corresponded to the new Executive Board. The Health Secretariat of the League offered—in competence and in devotion—a model for the new Secretariat-to-be. The World Health Organization will be far stronger than the Health Section because it has its own Assembly, its program of regional organization and much more definite powers than the Health Section ever possessed. Yet the Health Section accomplished notable tasks, in the establishment of a world system of epidemiological intelligence, in the standardization of biologic products, in the evolution of procedures for the control of malaria and cancer and other diseases, in the organization of world-wide programs for nutrition and housing. Its staff has continued to work

even during the years of war; and one member of that staff (Dr. Y. M. Biraud) served as Secretary of the New York Conference. The members of the one-time Health Committee and its staff have deep satisfaction in the certainty that its pioneer work will be carried forward, under the most favorable auspices, to a conclusion fraught with the benefits of fuller and more abundant health for all the peoples of our "One World."

## IMMUNIZATION AGAINST INFLUENZA

FOR some years there has been suggestive evidence that the use of suitable vaccines may lead to marked increase in the titer of antibodies circulating in the blood stream. The work of the Commission on Influenza of the Board for the Investigation and Control of Influenza and other Epidemic Diseases of the Preventive Medicine Service of the U. S. Army under the chairmanship of Dr. Thomas Francis, has brought this procedure into the field of actual military public health practice.<sup>1</sup>

The investigations of this Commission in 1942-1943 solved the problem of preparing a serologically effective, reasonably stable vaccine, free from any serious ill effects. They did this by cultivating viruses of influenza Types A and B in an allantoic fluid, inactivating the viruses by formalin and concentrating the protective material by ingenious methods.

In the winter season of 1943-1944 the first opportunity came for large-scale tests of the actual efficacy of the procedure. In six different localities (from New York to California) almost identical experiments were set up. In general, at each of the institutions concerned, groups of 1,000 to 3,000 young men in military service were vaccinated, half of them with a vaccine prepared from both A and B viruses, and the other half (alternately chosen in the same group) with formalized saline as a control. When a sharp national epidemic of influenza A broke out in November (one of the two most severe epidemics since 1918-1919) the stage was set for a rigorous test.

The case incidence during the epidemic for the unprotected subjects varied from 60 per 1,000 at California to 100 per 1,000 at Cornell. The comparative rate for the vaccinated subjects varied from 13 at Iowa to 43 at Cornell. In a given locality, the incidence rate was lower among the vaccinated by 70-80 per cent at Iowa, Michigan, and Minnesota Universities, and at universities in the New York-New Jersey area. At Cornell, the reduction was only 57 per cent; and at California, only 35 per cent. At Cornell, only half of the subjects who were clinically ill proved serologically positive; and at California the epidemic was a mild one (with only 26 cases in the peak week). In general, if we take the entire group of over 3,000 vaccinated men and over 3,000 controls, the vaccine would appear to have reduced incidence to one-third of its severity among controls. Dr. Francis concludes that these results "show clearly that subcutaneous vaccination of a human population with inactivated influenza virus vaccine exerts a pronounced effect upon susceptibility to influenza A."

Complete results from the extensive later use of influenza vaccines in the Army have not yet been made public; but one significant report has been issued by Francis, Solk, and Brace<sup>2</sup> on experience with influenza B during the winter of 1945-1946. At the University of Michigan, there were 600 Army students who had been subcutaneously vaccinated in October, 1945, with combined con-

centrated influenza A and B vaccines prepared from infected allantoic fluid. During an epidemic of influenza B which occurred in November, the experience of these men was compared with that of 1,100 men in another service unit who had not been vaccinated. The respective incidence rates (for hospitalized cases) were 99 per 1,000 for the unprotected and 11 per 1,000 for the protected group.

In considering the practical usefulness of such a procedure, the duration of the protection afforded is a point of major importance. The results of certain investigations indicated that, in comparing protected and unprotected groups, the superiority of the vaccinated group was sixfold in the second week after inoculation and less than twofold in the sixth and seventh week. Francis points out, however, that this apparent falling off in efficiency is probably due to the development of acquired immunity in the control group. He, himself believes that immunity due to inoculation is rather prolonged.

Finally, it is of great significance that in both types of influenza, an epidemic is preceded by a period (of perhaps two weeks) in which the presence of the virus may be detected by laboratory tests of well individuals. Such tests might be used as a warning sign calling for immunization of a threatened group in advance of the actual epidemic.

All in all, it would seem probable that immunization against influenza may become a part of civilian public health procedure before many years have passed.

A recent contribution from Henle and his colleagues at Philadelphia<sup>3</sup> provides valuable criteria as to the details of the process of this procedure, based on its influence upon antibody titer.

#### REFERENCES

1. Francis, *et al.* A series of seven papers for the Commission on Influenza occupying the entire issue of the *Am J. Hyg.*, 42:1 (July 1), 1945.
2. Francis, Solk, J. E., and Brace, W. M. The Protective Effect of Vaccination Against Epidemic Influenza B. *J. A M A*, 131:275 (May 25), 1946.
3. Henle, *et al.* Experiments on Vaccination of Human Beings against Epidemic Influenza. *J. Immunol.*, 53:75 (May), 1946.

## LETTER TO THE EDITOR

### TO THE EDITOR:

The over-riding problem which health workers in the field of venereal disease control face today is that of finding new, infectious cases. The essentials of that problem were well stated in the editorial, "Case Finding in the Control of Syphilis" which appeared in the *Journal* for May. The issues and problems of technique posed in this editorial, and the directions in which action is indicated, constitute a challenge to all health workers.

There is, however, one point in this editorial which I feel merits some elaboration and clarification lest a basic venereal case-finding device be misapplied by those less cognizant of the many ramifications of the problem.

In discussing contact investigation (direct epidemiologic investigation) the editorial states that "the variable lengths of the incubation period, combined with the promiscuity of the patient, makes it impossible, in many cases, to predetermine who, among all the contacts, is the source; hence many persons must be identified, found, and examined, in the hope that the source will be among them."

Although it is obvious from other statements in your editorial that you realize the search must be made for *all* infections which have occurred—not only the "source" individual but also all those to whom disease may have been passed on during the time from infection to discovery—I am fearful that

the above quotation may imply that the identification and treatment of the source is the primary object of the epidemiologic investigation.

In order to prevent the spread of venereal disease, contact investigation should locate cases in the early infectious stages and before the infection has been spread. Although locating the source of infection is undoubtedly important, too much emphasis has been placed upon it, and too little upon locating "spread" contacts. From a public health point of view, the distinction is somewhat immaterial; the presence of infectious disease at any point in the chain of contacts is of prime importance.

All too often, also, the so-called "sources" have passed into the latent stage before they are located and examined. Persons to whom the patient has given the disease are more likely to be in the open lesion or pre-lesion stage when examined and offer one of the best opportunities for the prevention of the further spread of the infection.

Interviewers therefore should attempt to obtain the names of all exposures within a reasonable period and not confine themselves to the search for the "elusive source."

I feel that this matter is of some considerable importance. Any consideration you may be able to give this letter with respect to publication in the *Journal* will be deeply appreciated.

J. R. HELLER, JR.

*Medical Director  
Chief, Venereal Disease Division  
U. S. Public Health Service  
Washington, D. C.*

# Report of the Committee on Constitution and By-Laws

of the

American Public Health Association

(Submitted July 23, 1946)

THE Committee on Constitution and By-Laws presents herewith a revision of the Constitution which is proposed for adoption at the Annual Meeting in November. This revision of the Constitution, together with a proposed revision of the By-Laws, was presented to the Governing Council for its information and suggested changes at the Annual Meeting held in New York in 1944. Since the proposed revision of the Constitution transfers certain provisions now in the By-Laws, the adoption of the revised By-Laws is contingent on adoption of the revised Constitution by two-thirds of the Fellows present and voting at the Annual Meeting. It is the desire of the Committee on Constitution and By-Laws to afford to each Fellow voting on a change in the Constitution a full opportunity to express his opinion on the details of the revision. Nevertheless, it is the considered opinion of the committee that in this instance the vote, of necessity, will have to be on the revised Constitution as proposed as a whole, since any adjustment of the details would upset a closely interwoven relationship with the By-Laws.

The proposed changes consist primarily of a different organization of the material, a different system of designating the sections and sub-sections of the several articles, and the transfer of two provisions from the By-Laws to the Constitution. Secondarily, there are a few substantive changes which will be discussed later in detail. The commit-

tee has sought to avoid changes over which there might be controversy so that the general purpose of more orderly arrangement, improved designation of sections, and elimination of needless repetition could be effectuated. It is felt that if this overall purpose were accomplished, any desirable substantive changes could be more easily made at later meetings.

Articles I and II of the revision remain unchanged. Article III is taken in substance from Articles III and V of the Constitution and Article I of the present By-Laws.

The existing Article III is divided into Articles IV and V, the former dealing with the organizational features of the Governing Council, the latter with its functions. The present Article III has a quite complicated and unusual system of designating sections and sub-sections. It is believed that the separation into two Articles, the changes in notation, some changes in wording and in the order of the paragraphs, will make reference easier and perhaps clarify the intent in certain instances.

Existing Article IV is renumbered Article VI. It is otherwise unchanged.

A new Article VII is inserted, transferring from the By-Laws certain Sections of Article III of the By-Laws. These establish the Executive Board, prescribe certain of its duties and certain restrictions in the Constitution where they belong more properly than in the By-Laws.

Article V, providing for amendments,

is renumbered Article VIII without change.

The substantive amendments are:

(Existing Article III, Section E, paragraph 4—new Article III, Section 1.) To withdraw authorization to the Governing Council "to recognize Associated Organizations." This provision has been in the Constitution since 1940. It was inserted in an attempt to meet a special situation, has never been used, and its meaning is so obscure that it probably never would or should be used.

(Existing Article III, Section F, new Article IV, Section 4.) Changes a quorum of Governing Council from "10" to "20" members.

(Existing Article III, Section E, 7—new Article V, Section 5.) Eliminates the requirement of a report from the Executive Board including "a definitely formulated statement of a program of the major activities proposed for the ensuing year," in addition to another report from the Chairman of the Executive Board reviewing the accomplishments of the preceding year. The committee believes that the report of the Board can be eliminated if its chairman includes in his report a statement of contemplated activities for the ensuing year.

(New Article VII, Section 4.) Grants authority to the Executive Board to designate, during a period of emergency only, an Assistant Treasurer with limited powers. This authority is necessary in order to permit the Association to pay its bills in the absence or disability of the Treasurer.

This Section also provides authority for the Executive Board to elect a Treasurer until the next meeting of the Governing Council, in the event of a vacancy in that office.

(New Article VII, Section 5.) Changes a quorum of the Executive Board from "4" to "5" members.

For the information of Fellows, and as a notice to the members of the Gov-

erning Council, a summary of the reasons for proposed changes in the By-Laws is presented herewith.

Article I. Membership and Dues. In the present By-Laws Article I is very long, somewhat involved and repetitious. In the proposed By-Laws it is divided into five articles dealing separately with Fellows, Members, Affiliated Societies, Dues and Discontinuance of Membership, respectively.

The following changes are to be noted:

1. The provision for classes of membership has been transferred to the Constitution.

2. Section 1 is unchanged in substance.

3. Section 2 defines "established professional standing" as in the present By-Laws except for the recognition of the degrees of Master of Public Health and Diploma in Public Health. However, this section deals only with the criteria, omitting the provisions for the election of candidates.

4. Sections 3 and 4 provide for the handling of applications for Fellowship and the mode of election. These provisions are unchanged in substance, except as follows:

(1) Applications falling under criteria (a) and (b) of Section 2 are subject to approval by a majority vote of the Committee on Eligibility. At present there is no provision for this committee to act on such cases.

(2) The requirement for "unanimous" approval by a Section Council under criteria (c), (d), and (e) is changed to "two-thirds," and "unanimous" approval of the Committee on Eligibility under criterion (c) is changed to "two-thirds." The Committee on Constitution and By-Laws believes these heavy majorities provide ample safeguards as to quality and protect



the individual applicant from the veto of a single member of the reviewing bodies.

5. Section 5 states that the rights and privileges of Fellows shall include the rights of members. While this has been an assumption, it is now nowhere specifically stated.

Article II deals with Members, Life Members, and Sustaining Members. The rights and privileges of Members are stated categorically. They are no different from those stated or implied in various sections of the present By-Laws.

Article IV proposes a substantive change to increase the dues of Sustaining Members to not less than \$100 per annum. This increase is recommended by the Executive Board after a careful review of the question.

Article V provides for Discontinuance of Membership. The three sections are taken from Article I, subdivisions C, D, and B.

Article VI, Publications, is a transfer of present Article IX. It contains no changes, except that the *American Journal of Public Health* is named the official journal of the Association.

Article VII prescribes the method of nominating and electing the Elective Members of the Governing Council. There are no changes, except that the list of nominees must be published not less than thirty days prior to the annual meeting, the ballots prepared so that the names appear in order determined by lot, and that the polls shall open on the first day of the annual meeting, and close at a time determined prior to their opening. It also provides that the Governing Council, rather than the Executive Board, shall determine precedence in tie votes.

Article VIII prescribes those functions of the Executive Board not transferred to the Constitution. It eliminates, however, the duty of confirming appointments to Section Committees. The Section Secretaries requested this change

because of delays caused to such committees in awaiting confirmations. Furthermore, in no instance has the Executive Board challenged a Section appointment. This provision has also been removed from the Articles (X and XI) pertaining to Committees and Sections.

Article X. Committees. No substantive changes, other than that mentioned above, have been made in this Article. Some provisions no longer needed have been dropped and some changes in wording are proposed.

Article XI contains the substantive change above noted under Article VIII and prohibits the publication without approval of the Governing Council of resolutions passed by a Section as expressing a policy of the Association.

Article VIII, Finances, of the present By-Laws becomes Article XII without change.

Article VI, Meetings, becomes Article XIII with some change in language defining the "annual meeting."

Article X, Amendments, becomes Article XIV without change.

As stated above, the proposed changes were submitted in detail to the Governing Council at its 1944 meeting. These detailed changes comprise nine pages of mimeographed material relating to the Constitution and thirty-one pages relating to the By-Laws. The existing Constitution and By-Laws, and the proposed revision are given in parallel columns, showing each transfer, each elision, and each addition. Copies of this are available at the Association's office and will be sent to any Fellow upon request. They are not being printed in the *Journal* because of the considerable paper and space that would be required.

EDWARD S. GODFREY, JR., M.D.,  
Chairman

HAVEN EMERSON, M.D.

FRANKLIN M. FOOTE, M.D.

CHARLES E. SHEPARD, M.D.

## PROPOSED REVISION OF THE CONSTITUTION

of the

## AMERICAN PUBLIC HEALTH ASSOCIATION

Submitted by The Committee on Constitution and By-Laws

## ARTICLE I NAME

The name of this Association, incorporated under the laws of Massachusetts, is the American Public Health Association.

## ARTICLE II OBJECT

The object of this Association is to protect and promote public and personal health.

## ARTICLE III MEMBERSHIP

*Section 1.* There shall be seven classes of constituents to be designated as Fellows, Honorary Fellows, Members, Sustaining Members, Life Members, Affiliated Societies, and Regional Branches.

*Section 2.* The right to hold office, except the office of Vice-President, or to serve as a member of the Governing Council, the Executive Board, or of a Section Council, or of a standing committee, or as the chairman of a committee of the Association or of a Section, or to vote for elective Councilors or on any amendment to the Constitution shall be limited to Fellows and to Life Members and Honorary Fellows who have been elected Fellows of the Association.

*Section 3.* The qualifications of the several classes of constituents, and the dues of each of them, the manner of their election, and their rights and privileges, except as specified in this Constitution, shall be established in the By-Laws.

## ARTICLE IV GOVERNING COUNCIL COMPOSITION

*Section 1.* There shall be a Governing Council which shall consist of:

(a) The officers of the Association and the elective members of the Executive Board.

(b) The Chairman, Vice-Chairman, and Secretary of each Section, and the elective members of the Council of the Health Officers Section.

(c) One representative to be designated by each Affiliated Society.

(d) One representative to be designated by each Regional Branch.

(e) Thirty members of the Council, to be elected by the Fellowship of the Association, for three-year terms, one-third of whose terms shall expire each year. Such members of the Council shall be known as elective Councilors and shall be nominated and elected as provided for in the By-Laws. If an elective

Councilor is elected a Section Chairman, Vice-Chairman, or Secretary, or an elective member of the Council of the Health Officers Section, or appointed the representative of an Affiliated Society, or of a Regional Branch, a Councilor to fill such vacancy shall be elected by the Governing Council. All vacancies while in office shall be filled by election for the unexpired term. After two consecutive terms, an elective Councilor shall be ineligible for reelection to the Council during one Association year.

*Section 2.* The terms of all Councilors, except the representatives of Affiliated Societies and Regional Branches, shall begin at the end of the annual meeting at which they are elected, and shall terminate at the end of the annual meeting at which their respective terms expire; provided that newly elected Councilors shall have the right to attend meetings of the Council in an advisory capacity as soon as elected.

The terms of the representatives of Affiliated Societies and Regional Branches shall begin and terminate in accordance with the constitutions and by-laws of their respective organizations.

*Section 3.* The Officers of the Association shall be the Officers of the Council.

*Section 4.* A Quorum of the Council shall consist of twenty Councilors.

*Section 5.* Meetings of the Council shall be called by the Executive Secretary at the request of the President, or at the request in writing of any twelve Councilors. In the latter case, the call to the meeting shall be issued at least twenty days in advance of the meeting and shall state the purpose for which it is called.

## ARTICLE V GOVERNING COUNCIL FUNCTIONS

The functions of the Governing Council shall be:

*Section 1.* To establish and amend the By-Laws of the Association.

*Section 2.* To establish policies for the Association and for the guidance of the Executive Board and the Officers.

*Section 3.* To consider all resolutions proposed for approval in the name of the Association, and to receive and act upon a report from a committee on resolutions appointed annually by the President.

*Section 4.* To approve all standards

promulgated in the name of the Association.

*Section 5.* To receive at its first session at the time and place of the annual meeting of the Association, a report from the Chairman of the Executive Board in which the work, the accomplishments, and the financial status of the Association during the year preceding such annual meeting shall be reviewed and a statement made of the major activities contemplated for the ensuing year.

*Section 6.* To establish Sections of the Association; to combine or discontinue them when necessary; to prescribe the qualifications of the members of Section Councils and the chairmen of section committees; to maintain coordination among Sections; and to formulate general rules governing their policies.

*Section 7.* To elect the Executive Board, the officers of the Association, with the exception of the Chairman of the Executive Board and the Executive Secretary, to elect Fellows, Honorary Fellows, Life Members, and Affiliated Societies, and to establish Regional Branches.

*Section 8.* To publish after each of its meetings an abstract of the minutes of such meeting.

#### ARTICLE VI OFFICERS

The officers of this Association shall be a President, a President-elect, three Vice-Presidents, an Executive Secretary, a Treasurer, and the Chairman of the Executive Board. The officers, with the exception of the Chairman of the Executive Board and the Executive Secretary, shall be elected by written ballot of the Governing Council as provided in this article and in the By-laws. The President-elect shall serve as such from the close of the annual meeting at which he was elected to the close of the next annual meeting, when he shall automatically become President. As President he shall serve to the close of the next succeeding annual meeting. However, in case of the inability of the President to complete his term for any reason, the President-elect shall at once succeed to the duties of President, filling the unexpired term of his predecessor and his own term consecutively. Other officers, except the Chairman of the Executive Board and the Executive Secretary, shall serve from the close of the annual meeting when elected until the close of the next annual meeting, and all officers shall serve in any case until their successors are elected and qualified. A majority vote of the Councilors voting shall be required to elect, and if no candidate receives a majority vote on the first ballot, the candidate receiving the smallest number of votes shall be dropped after each ballot in succession until a majority vote is obtained.

The Chairman of the Executive Board and the Executive Secretary shall be elected by the Executive Board, which Board shall define the duties and authority of these officers, respectively.

#### ARTICLE VII EXECUTIVE BOARD

*Section 1.* There shall be an Executive Board, consisting of the President, the President-elect, the Treasurer, and six members, to be known as the Elective Members, elected for terms of three years each by the Governing Council. The Elective Members shall be at the time of their election past or present members of the Governing Council. The terms of the Elective Members shall begin at the close of the annual meeting at which they are elected and terminate at the end of the annual meeting at the expiration of their respective terms. The terms of two Elective Members shall expire each year in rotation.

*Section 2.* Acceptance of membership on the Executive Board shall terminate any appointment such Fellow may hold on any of the standing committees of the Association.

*Section 3.* It shall be the duty of the Executive Board to direct the administrative work of the Association; to act as the Trustee of the Association's properties; to elect the Members and Sustaining Members; and in general to carry out the policies of the Governing Council between meetings of the latter.

It may designate an Assistant Treasurer whose powers shall be limited to the disbursement of funds in accordance with duly authorized budgets for the ordinary conduct of Association business. Such power shall be exercised only during a period when, in the opinion of the Board, an emergency is created due to the absence or disability of the Treasurer. Such Assistant Treasurer may be a Fellow or a corporate fiduciary institution.

In the event of a vacancy in the office of Treasurer, the Executive Board shall have power to elect a Fellow to serve as Treasurer for the unexpired term.

It shall have such further powers and duties as may be prescribed in the By-Laws.

*Section 4.* A Quorum of the Executive Board shall consist of five members.

#### ARTICLE VIII. AMENDMENTS

This Constitution may be amended by a two-thirds vote of the Fellows of the Association present and voting at an annual meeting, provided that the specific amendment to be acted upon is published in the official publication of the Association not less than thirty days prior to the meeting, and provided further that the amendment receives the approval of the Governing Council.

## PROPOSED REVISION OF THE BY-LAWS

of the

## AMERICAN PUBLIC HEALTH ASSOCIATION

Submitted by The Committee on Constitution and By-Laws

## ARTICLE I FELLOWS

*Section 1.* Professional health workers who have been members of the Association for at least two years, and who are of established professional standing in the field of public health (whether employed by public or private organizations or in independent private practice) shall be eligible for election as Fellows, provided that the applicant shall have reached his thirtieth birthday at the time application for Fellowship is made and subject to the further conditions of this Article.

*Section 2.* The following persons shall be considered to have an established professional standing in public health for this purpose:

(a) A person who has rendered acceptable service for two or more years in a responsible public health position and who has been awarded in course a degree of Doctor of Public Health, Doctor of Science in Public Health, Doctor of Philosophy in Public Health, Doctor of Medicine with at least one year of graduate study in public health in a university, Master of Public Health, Diploma in Public Health or other equivalent degrees, according to standards approved by the Executive Board of the American Public Health Association.

(b) A person who has been awarded in course an academic or professional degree involving training in public health and who has been regularly engaged in health work for at least five years, having rendered meritorious service as a health officer or in responsible charge of work in either a public or private health agency.

(c) A person who has done notable original work in public health or preventive medicine of a character to give him a recognized standing.

(d) A person regularly engaged in health work for at least five years, who has given evidence of special proficiency, who has attained a recognized standing.

(e) A teacher of public health or one of its constituent sciences who has attained distinction as an expounder of the principles of public health or its constituent sciences. Such a teacher shall have had at least five years' experience as a teacher of public health subjects. Any years of experience as defined in paragraphs (b) and (d) that the applicant may have had shall be considered the equivalent

of the same number of years' experience as a "teacher."

(f) A person not covered by the above, who has made substantial contributions to public health work in his chosen branch and who has attained a recognized professional standing.

*Section 3.* Every application for Fellowship shall be made on an approved form and shall be sponsored by two Fellows of the Association who shall be Fellows of the Section with which affiliation is desired, provided, however, that when affiliation with a Section is not desired, the sponsors may be any two Fellows in good standing in the Association. Fellows without Section affiliation shall be known as unaffiliated Fellows.

*Section 4.*

(a) When an application has been duly sponsored and otherwise completed, it shall be transmitted to the Administrative Office of the Association, which shall make note thereon of such knowledge as it may have concerning the standing of the applicant in the Association. The application shall be forwarded by the Administrative Office to the Secretary of the Section in which affiliation is desired for the action of the Section Council, and, when acted upon by the Section Council, he shall return it to the Administrative Office after he shall have endorsed thereon the action of the Section Council. When the application is for unaffiliated Fellowship, the Executive Board of the Association shall act in place of the Section Council. To be eligible for election, individuals applying for Fellowship under the provisions of subsections (a) and (b) of Section 2 of this Article shall require for approval a majority vote of the Section Council or the Executive Board. All other applicants shall require for approval a two-thirds vote of such Section Council or the Executive Board.

(b) When the application has been approved by the Section Council or the Executive Board, as above provided, it shall be voted upon by the Committee on Eligibility. Applications requiring a majority vote of the Section Council or Executive Board shall require for approval a majority vote of the Committee on Eligibility. All other applications shall require unanimous approval of the Committee on Eligibility. If approved, as above specified, and provided the name of

the applicant shall have been officially published at least fifteen days in advance, the application shall be voted upon by the Governing Council, and if approved by three-fourths of the vote cast, the applicant shall be declared elected a Fellow.

#### Section 5.

(a) A Fellow may belong to and vote in only one Section, but such affiliation may be transferred to another Section if approved by vote of a majority of the Council of the latter Section. Unaffiliated Fellows may become affiliated with a Section if approved by vote of a majority of the Council of the Section with which affiliation is desired.

(b) Fellows shall have all the rights and privileges provided for Members in addition to those specifically reserved to them by the Constitution and By-Laws.

Section 6. Honorary Fellows may be elected by a three-fourths vote of the Governing Council for distinguished service in public health. Honorary Fellowship shall not confer voting power but Honorary Fellows who have previously been Fellows of the Association shall retain all the privileges of Fellowship.

### ARTICLE II MEMBERS

Section 1. Persons professionally engaged or interested in public health work shall be eligible for election as members by a three-fourths vote cast by the Executive Board when sponsored by two members or Fellows and after approval by the Committee on Eligibility. They shall be entitled to receive the official journal of the Association, to vote for the officers and members of the Council of the Section with which they are affiliated, and upon all motions and resolutions coming before such Section, to participate generally in its proceedings and to serve on committees, except as provided in the Constitution and By-Laws. A member may belong to and vote in only one Section, but such affiliation may be transferred to another Section if approved by vote of a majority of the Council of the Section to which change is desired. Unaffiliated members may become affiliated with a Section if approved by vote of a majority of the Council of the Section with which affiliation is desired.

Section 2. Individuals or corporations interested in public health may be elected to Sustaining Membership by a three-fourths vote of the Executive Board. Sustaining Members shall be entitled to receive the journal and such other publications of the Association as the Executive Board may designate.

Section 3. Upon the recommendation of the Committee on Eligibility, any individual member or Fellow of the Association may be elected a member for life. The dues for Life Members shall be \$100.00, payable within one year after election. Election to this grade shall not affect the privileges held by such an individual as a regularly elected Member or Fellow.

### ARTICLE III AFFILIATED SOCIETIES

Section 1. A state or provincial public health association or similar regional society including more or less than a state, primarily composed of professional public health workers and organized for the same general objects as the American Public Health Association, may be elected by a three-fourths vote of the Governing Council as an Affiliated Society, provided that not less than twenty of its active members and at least one-half of its active members are members or Fellows of the American Public Health Association. Not more than one such society shall be admitted from the same area.

Section 2. A society applying for affiliation shall submit a copy of its constitution and by-laws, its last annual budget, a roster of its members, and such other evidences of its qualifications as may be required. It shall submit annually and at other times such reports on its financial standing, membership, and other matters as may be required by the Executive Board of the American Public Health Association.

Section 3. The Committee on Eligibility shall consider all applications for affiliation and report its recommendations to the Governing Council.

### ARTICLE IV DUES

Section 1. Honorary Fellows and Life Members shall be exempt from the payment of annual dues. The dues of all other constituents are payable annually in advance.

Section 2. The dues for Members shall be \$5.00, for Fellows \$10.00, and for Sustaining Members \$100.00 or more.

Section 3. The dues for Affiliated Societies shall be one per cent of their gross annual income, provided that the minimum dues per society shall be \$10.00 per year, and provided further that for every Fellow or Member paying annual dues to the American Public Health Association, the Association shall remit to the Affiliated Society of which such person is a member the sum of \$1.00 per annum.

### ARTICLE V DISCONTINUANCE OF MEMBERSHIP

Section 1. Constituents of any class whose

dues are unpaid for six months or more shall be considered not in good standing. Constituents not in good standing shall not be entitled to any of the privileges or powers of membership, Fellowship, or affiliation. Good standing may be resumed upon the payment of all arrears and dues in advance for one year, provided the lapsed period is not greater than one year. The Administrative Office shall notify by registered mail all constituents who have been in arrears for a period of eleven months. The names of constituents in any class whose dues remain unpaid for one year or more and who have been duly notified as above provided shall be presented to the Executive Board which shall order the names of such constituents stricken from the membership roll. Constituents whose names have been stricken from the rolls in this manner may be again admitted in the manner provided for the election of new constituents in the class for which they make application, provided such person or organization complies with the eligibility requirements at the time the new application is made.

*Section 2.* If, in the opinion of the Executive Board, any member or Fellow of the Association permits the use of his name, or otherwise allows himself to be quoted or used for illustration in the advertising of a commercial product, in such a manner as to reflect discredit upon the Association, his Fellowship or membership in the Association shall thereupon be terminated.

*Section 3.* Upon the recommendation of the Committee on Eligibility the Governing Council may discontinue the membership, Fellowship or affiliation of any constituent. Three-fourths of the votes cast shall be necessary for such action.

#### ARTICLE VI PUBLICATIONS

*Section 1.* All publications of the Association and of its Sections shall be issued under the direction of the Executive Board:

*Section 2.* The *American Journal of Public Health* shall be the official journal of the Association. The Executive Board shall appoint a Managing Editor of the official journal and an Editorial Board of not less than five members to serve at the pleasure of the Executive Board. All papers and reports for the annual meetings are to be accepted with the understanding that they shall be the property of the Association for publication, unless this right is waived by the Managing Editor.

#### ARTICLE VII ELECTIVE COUNCILORS

*Section 1.* The Elective Members of the

Governing Council shall be nominated and elected as follows:

There shall be a Nominating Committee composed of one Fellow elected by each Section at the preceding annual meeting, and an additional Fellow designated by the Executive Board, the latter serving as Chairman.

This committee shall present to the Administrative Office at least two months before the next annual meeting the names of at least twenty and not more than thirty Fellows of the Association selected with due regard to geographical and membership considerations as nominees for the Governing Council.

Upon the petition of twenty-five Fellows the Nominating Committee shall add the name of any Fellow to the nominees selected by it, provided such petition is received not less than fifteen days before the annual meeting.

*Section 2.* The Administrative Office shall publish to the membership not less than thirty days prior to the annual meeting the nominees selected by the Nominating Committee. Prior to the annual meeting it shall prepare ballots upon which the names of all nominees shall appear in order determined by lot and one such ballot shall be handed to each Fellow entitled to vote at the annual meeting upon his signing a receipt therefor.

*Section 3.* The polls for the reception of ballots shall be open at 9 A.M. on the first day of the annual meeting and shall close at a time to be determined each year by the Executive Board prior to the opening of the polls.

*Section 4.* The Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at the annual meeting shall be declared elected to fill existing vacancies. Should two or more candidates receive the same number of votes, the Governing Council shall, when necessary, determine by written ballot the order of precedence of such candidates.

#### ARTICLE VIII EXECUTIVE BOARD

*Section 1.* The Executive Board shall elect from its own membership a Chairman who shall serve in that capacity for such term as the Executive Board shall determine. It shall also designate such other officers of the Board as it may require for the conduct of its business.

*Section 2.* If a vacancy among the Elective Members of the Executive Board shall occur after the annual meeting, the President shall designate a nominating committee from the Governing Council. Such committee shall

nominate not less than three candidates for the vacancy, from among whom the candidate receiving the highest number of votes of the Governing Council in a mail ballot shall be declared elected to the Executive Board to fill the vacancy.

*Section 3.* In addition to those prescribed in the Constitution and in these By-Laws, the Executive Board shall have the following powers and duties:

(a) To plan methods for the procurement of funds.

(b) To approve the budgets for the Association's work.

(c) To conform to the policies of the Governing Council in the conduct of its work.

(d) To appoint the members of the standing committees, to authorize the establishment and to confirm the appointment of all other Association committees.

(e) To transmit a report of its proceedings and transactions to the Governing Council at least thirty days before each annual meeting.

*Section 4.* After two consecutive terms of three years an elective member of the Executive Board, except one serving as chairman, shall be ineligible for reelection during one Association year.

## ARTICLE IX NOMINATION OF OFFICERS

The officers elected by the Governing Council shall be nominated from the floor by that body.

## ARTICLE X STANDING AND SPECIAL COMMITTEES

*Section 1.* There shall be four standing committees of the Association as follows:

(a) Committee on Eligibility.

(b) Committee on Administrative Practice.

(c) Committee on Research and Standards.

(d) Committee on Professional Education.

*Section 2.* The standing committees of the Association shall be appointed by the Executive Board which shall also designate their respective chairmen. Each standing committee shall designate from among its membership such other officers as it may require for the conduct of its business and shall control its policies within the limitations prescribed by the Governing Council and the Executive Board. The Executive Secretary shall be a member, ex-officio, and serve as secretary of each standing committee.

*Section 3.*

(a) The Committee on Eligibility shall consist of one Fellow to be elected by each Section and an additional Fellow elected by the Executive Board who shall serve as

Chairman. Members shall serve for a term of two years.

(b) This committee shall pass upon the eligibility of Fellows, members and other constituents in accordance with the provisions of the By-Laws.

*Section 4.*

(a) The Committee on Administrative Practice shall consist of fifteen Fellows, twelve of whom shall be designated by the Executive Board to serve for a term of four years, the terms of three members expiring each year, and three of whom shall be elected annually by and from the Fellows affiliated with the Health Officers Section.

(b) This committee shall engage in the collection of information regarding current public health practices and analyze the material obtained to derive standards of organization and achievement. The findings and standards may be made available to public health workers through publications, information and field service under such conditions as the committee may establish. No standards shall be promulgated as the official and authorized judgment of the Association except with the approval of the Governing Council.

*Section 5.*

(a) The Committee on Research and Standards shall consist of fifteen Fellows representative of the various Sections of the Association appointed by the Executive Board. Members shall serve for a term of three years, the terms of five members expiring each year.

(b) This committee shall be responsible for carrying out research and the development of standards in the technical branches of public health service, and shall coordinate such research and standardization. This committee shall also be charged with the duty of reviewing from time to time standards already established. No standards shall be promulgated as the official and authorized judgment of the Association except with the approval of the Governing Council.

*Section 6.*

(a) The Committee on Professional Education shall consist of twelve Fellows appointed by the Executive Board. Members shall serve for a term of three years, the terms of four members expiring each year.

(b) This committee shall be responsible for carrying out research and the development of standards for professional education and training in public health work and shall perform such other functions as may be delegated to the committee by the Governing Council with the view of maintaining professional qualifications of high standard. No standards shall be promulgated as the official

and authorized judgment of the Association except with the approval of the Governing Council.

*Section 7.* Unless otherwise provided in these By-Laws, all other Association Committees shall be authorized and appointed by the Executive Board and the appointments of their members shall expire at the next annual meeting.

## ARTICLE XI SECTIONS

*Section 1.* The Executive Board shall approve rules and regulations relating to the government of the Sections, and to the appointment of administrative committees. Each Section shall elect its own officers and shall name its respective Section committees. The right to hold office or to serve as a member of a Section Council or as chairman of a committee in a Section shall be limited to the Fellows affiliated with such Section.

### *Section 2.*

(a) The Section Chairman, with the advice of the Section Council, shall appoint a Committee on Nominations from the Fellows affiliated with the Section at least fifteen days before each annual meeting. The Section Secretary shall be a member of such committee.

(b) The names of the members of the Committee on Nominations shall be announced at the first meeting of the Section at each annual meeting of the Association. The Committee on Nominations shall present at the second meeting of the Section a list of nominees for the Section officers, and for membership in the Section Council; provided that if the name of any Fellow he transmitted to the Nominating Committee over the signature of ten Fellows of the Section prior to the second meeting of the Section, the Nominating Committee shall add the name of such Fellow to its own list of nominees.

*Section 3.* The officers of each Section shall be a Chairman, a Vice-Chairman, and a Secretary, who shall be the representatives of the Section to the Governing Council of the Association, except as provided in the Constitution.

*Section 4.* New terms shall begin and old terms shall expire at the end of annual meetings. After five consecutive years in any elective Section office, except that of Secretary, a member shall be ineligible to reelection to that office during one Association year.

*Section 5.* The Chairman, or in his absence the Vice-Chairman, shall preside at meetings of the Section.

*Section 6.* The Secretary shall prepare the scientific program of the Section for the annual meeting, subject to the recommendations

of the Section Council, and shall submit same to the Administrative Office. He shall keep the minutes and other records of the Section, and shall transmit to the Executive Secretary of the Association a copy of the minutes of both the business and scientific sessions as soon as practicable after the close of the annual meeting of the Association. When unable to be present at meetings, he shall thoroughly instruct a substitute as far in advance of the meeting as possible.

*Section 7.* There shall be a Section Council composed of the three officers of the Section and five members, to be known as the elective members, each of whom shall be elected for a term of five years; provided that when a Section is first established one member shall be elected to serve for one year, one for two, one for three, one for four, and one for five years.

*Section 8.* The duties of the Section Council shall be:

(a) To recommend papers, and to make general recommendations in relation to the annual meeting program.

(b) To advise on Section membership and on Section policies.

(c) To submit annually to the Governing Council through the Executive Board a report of the transactions of the Section.

(d) To report annually to the Governing Council through the Executive Board on the plans, scope and policy of the Section during the succeeding year.

(e) To formulate rules of procedure for the Section.

(f) To consider and transmit to the Governing Council resolutions originating in the Section. Only resolutions approved by the Governing Council shall be published as representing the policy of the Association.

(g) To advise on the publication of papers and reports presented at the Section meetings.

(h) To advise with respect to the appointment of technical committees, subcommittees, or Section representatives on committees of the Association.

## ARTICLE XII FINANCES

All remittances to the Association shall be deposited to the account of the Treasurer. The Treasurer shall be custodian of investments of the Association and shall disburse funds in accordance with duly authorized vouchers. With the approval of the Executive Board he may establish a drawing account for the Executive Secretary, who shall send to members of the Executive Board a financial summary of receipts and disbursements each month. Once each month, or oftener if called



for, he shall also forward to the Treasurer and to the Chairman of the Executive Board an itemized statement of all expenditures. The Executive Secretary, the Treasurer and the Assistant Treasurer shall be bonded at the expense of the Association in an amount to be determined by the Executive Board. The books of the Association shall be audited annually by certified public accountants to be appointed by the Executive Board.

#### ARTICLE XIII MEETINGS OF THE ASSOCIATION

There shall be one general meeting of the Association, to be known as the annual meeting which shall be held each year at a place selected by the Governing Council. Special

meetings of the Association may be called by a majority vote of the Governing Council, the Executive Board, or the Association. In all proceedings of the Association, *Robert's Rules of Order* shall be official.

#### ARTICLE XIV AMENDMENTS

These By-laws may be amended by a two-thirds vote of those voting on the Governing Council during the annual meeting, provided that twenty-four hours prior written notice thereof has been given. The By-laws may further be amended by a two-thirds vote of those voting at any meeting of the Governing Council called for the purpose, provided that notice thereof shall have been given at least fifteen days prior to such meeting.

# Credit Lines

## A FORTHRIGHT APPROACH TO THE DIPHTHERIA PROBLEM

A general increase in diphtheria morbidity and mortality has been recorded most recently in the review published in the *Journal of the American Medical Association* July 27, 1946, p. 1053. In practically all parts of the United States and in some parts of Canada public health workers are faced by increases which appear to have wiped out the gains of several years of declining diphtheria rates.

Because of this situation Credit Lines here reproduces an actual account of what one state has done with the diphtheria program. This record of the New York State Diphtheria Conference Committee meeting reflects outstanding coöperation between the official state health and education departments, the state medical society, a voluntary health agency, an insurance company, and interested citizens. It reflects not only good epidemiology, but good community organization.

Present were the following:

*State Department of Health:* James E. Perkins, M.D., Deputy Health Commissioner, presiding; Hollis S. Ingraham, M.D., Director, Division of Communicable Diseases, and Robert F. Korn, M.D., Asst. Director, Division of Communicable Diseases.

*State Department of Education:* Cyrus H. Maxwell, M.D., Chief, Health Service Bureau.

*Medical Society of the State of New York:* Walter P. Anderton, M.D., Secretary, and Dwight S. Anderson, Executive Secretary.

*Metropolitan Life Insurance Company:* Donald B. Armstrong, Second Vice-President, and George M. Wheatley, M.D., Assistant Vice-President.

*S.C.A.A. State Committee on Tuberculosis and Public Health:* Homer Folks, Secretary, and Robert W. Osborn, Assistant Executive Secretary.

Upon authorization by State Health Commissioner, Dr. Edward S. Godfrey, Jr., it was stated that the purpose of the meeting was to consider ways and means of checking a significant rise in diphtheria prevalence in up-state New York. A similar committee had directed the coöordinated services of the represented agencies during the State Diphtheria Eradication Campaign of 1926-1930.

*Dr. Perkins* explained that the present meeting was to assay the problem, to consider recommended procedures, to determine the extent of the proposed immunization campaign, and to review what each agency represented might contribute to a coöordinated and concentrated effort to further protect children against diphtheria.

### 1. Statement of the Problem:

*Dr. Ingraham* presented tables showing diphtheria cases and deaths from 1908 to 1945 inclusive for the state, outside of New York City. From 1940 to 1944 inclusive, morbidity and mortality rates were relatively minor. In 1945 the cases (123) more than doubled the number reported in 1944, and there were more than four times as many deaths (13). A monthly tabulation for 1944 and 1945 and through April 15 of 1946 reveals a substantial increase in both cases (89) and deaths (9) for the first 3½ months of 1946. It is necessary to go back to 1935 and 1936 to find a comparable prevalence.

The fatality rate has varied only slightly through the years, regardless of the number of cases. It was pointed out that there is no evidence as to an increased virulence of the diphtheria bacillus. The increased prevalence of the disease in the Eastern seaboard and the Eastern north central states possibly may be derived from the increase of the disease in Europe.

There is a difference as to cases and deaths by sex, inasmuch as morbidity is higher among adult females than among adult males. Fatality rates are higher among males. The age distribution of cases has remained essentially constant in the last thirty years. However, during the same time there has been a tendency for deaths to occur less frequently among the preschool group and more often in the adult group. On the whole the figures for later years are not particularly significant because of the small numbers involved.

"Spot" maps were exhibited showing the distribution of diphtheria cases over the state. There was no great concentration of cases in any one locality, except that, for 1946, Buffalo has exhibited the greatest deviation from figures for previous years, with a marked increase of cases and deaths.

There have been cases and deaths of children with previous immunization history, but no deaths where there have been two initial immunization treatments, followed by a "booster" dose upon entering school.

## 2. Recommended Immunization Procedures and Objectives:

Dr. Korus reviewed State Health Department recommendations as to procedures as follows:

Questions have arisen concerning the effectiveness of artificial active immunization against diphtheria, specifically the occurrence of a sizable number of cases of the disease in previously immunized persons. However, careful study of such records indicates that these apparent failures have been for the most part due to inadequate initial immunization or to the prolonged lapse of time between immunization and onset of diphtheria. Experience gained in Halifax and elsewhere clearly indicates that the attack rate among the non-immunized is seven to ten times as great as among the immunized. Evidence based on Schick test surveys in Kingston, N. Y., indicates that during the period 1922 to 1938 a marked reduction in naturally acquired immunity to diphtheria has occurred in children under 10 years of age. Presumably this reduction is a reflection of the reduced incidence of cases and prevalence of carriers.

Bearing this fact in mind, plus the occurrence of small outbreaks of diphtheria recently in Kingston and Schenectady, both of which communities, according to accepted standards, were thought to be adequately immunized, it seems indicated that the standards as to the adequacy of community protection against the disease need to be raised. Thus, instead of a minimum of 30 per cent of children under 5 years immunized in order to prevent outbreaks of this disease, this minimum might well be raised to 55 per cent or higher. Emphasis should be placed on the need for a booster dose of diphtheria toxoid on entry into school.

The schedule of injections being recommended by the Department agrees with the recommendations of the American Public Health Association and is presented below:

(1) Alum precipitated toxoid is preferred

to fluid toxoid since it has been clearly shown to be a superior antigenic stimulus.

It is urged that initial immunization consists of *two* injections, 1 ml. each, of precipitated toxoid administered *one month apart*, the first to be given at 6 months of age.

(2) To all children receiving initial immunization in infancy, a *booster* dose of 1 ml. alum precipitated toxoid is strongly recommended at the time of *entry* into school.

(3) Children of preschool and school age who were not immunized as infants should receive the course of injections mentioned in (1) above.

(4) In the face of the epidemic occurrence of diphtheria in a given community, booster doses of toxoid might well be given to all children who have not been so immunized during the previous three years.

(5) The occurrence of diphtheria in a household should lead to the immediate administration of toxoid to other household members including adults. Preliminary Schick testing and Moloney testing for sensitivity to toxoid may be indicated in adults. Depending on the results of such tests, a modified course of diphtheria toxoid may be given.

It was the prevailing opinion among committee members that the Schick test should have no mass application, but that physicians might well wish to use it with private patients. It was brought out in the discussion that one of the important contributing causes in the recent deaths from this disease was the failure of physicians to institute adequate early treatment. It is strongly urged that diphtheria antitoxin be administered immediately by the physician to all patients in whom he suspects the diagnosis of diphtheria. The practice of awaiting the reports of laboratory examination of nose or throat cultures before administering specific serum therapy, despite the presence of clinical evidence of diphtheria, is to be strongly discouraged.

The Department does not discourage the use of multiple vaccines, although the combination of diphtheria toxoid with whooping cough vaccine is not favored because immunization against the latter disease is needed at an earlier age. The administration of whooping cough vaccine to 3 month old infants is now urged. Vaccination against diphtheria is of little value in infants under 6 months of age, since the presence of circulating antitoxin prevents adequate antigenic response.

## 3. Consideration of Scope of Campaign to Be Undertaken:

It was the consensus of opinion that the increasing prevalence of diphtheria merited rather vigorous and sustained remedial efforts by all of the agencies concerned, with particular attention to localities having a marked increase in cases and deaths, and where there has been a low percentage of immunization of children.

#### 4. Consideration of Coördinated Activities:

*Mr. Folks* pledged the whole-hearted cooperation of the State and Local Committees on Tuberculosis and Public Health along the lines contributed during the Diphtheria Campaign of 1926-1930. *Mr. Osborn* explained that of the 62 County and City Associations, 50 have full-time executive secretaries; 9 have part-time workers, leaving only three without executive service. Four Field Advisers are available to help interpret to these Local Associations the need for and plans of the undertaking. The monthly *S.C.A.A. News* will be available for publicity and assistance will be given in the distribution of educational materials and local promotional efforts.

*Dr. Perkins* presented leaflet and poster materials now available from the State Health Department and indicated that it might be possible to produce a movie trailer for theaters in the near future.

*Dr. Armstrong* mentioned the following Metropolitan Life Insurance Company educational items in production:

- A revision of diphtheria leaflet with a time-table for immunization treatments

- A new immunization leaflet with time-table covering diphtheria, smallpox, and whooping cough

- A booklet on communicable diseases of childhood

- A series of "spot" broadcasts on WJZ and WOR which could include messages on diphtheria

He also emphasized the value of talking slide-films for school groups. These can be produced rather quickly and without too much expense.

*Dr. Perkins* said the Department had produced such material and that a slide film was under way on farm labor camps. The group opinion was that it is not necessary to produce expensive posters.

*Dr. Maxwell* indicated the value of a placard for the office of the private physician, stating that the health officer recommends immunization treatments against diphtheria, smallpox, and whooping cough, etc.

*Dr. Anderton* and *Mr. Anderson* stated that the columns of the *State Journal of Medicine*

were open for editorial statements and requested the Department to send material soon for consideration, especially emphasizing recommendations on treatment.

*Dr. Perkins* and *Dr. Maxwell* discussed possible procedures for giving a "booster" dose of toxoid to kindergarten and first grade students and initial treatments to school children not previously immunized.

*Dr. Maxwell* agreed to examine records to ascertain the number of school children now needing "booster" and immunization doses. Plans will need to be formulated between the local health officer, school physician and county medical society as to routine set-up and facilities to administer immunization treatments in the schools and during Summer Round-ups.

*Dr. Maxwell* invited the Department to submit materials to be mailed to school superintendents and principals.

The committee agreed that it would be well to meet in Albany within two months, at the call of the chairman, to proceed further with plans as outlined.

#### OHIO MAKES A START

Ohio has just put on a demonstration of what can be done by an organized public opinion exerting pressure upon a reluctant legislature. The recent special session of Ohio's 96th General Assembly appropriated \$3,727,000 or nearly two-thirds of the \$6,206,000 requested by Governor Lausche for the mental health program of the state.

*Mental Hygiene in Action* of the Cleveland Mental Hygiene Association (1101 Swetland Building, Cleveland 15) tells the story in its May-June issue. It reports, "By far the most significant and hopeful feature of the special session was the effective demonstration of wide public support for adequate mental health appropriations which the spokesman for several important state organizations, led by the Ohio Mental Hygiene Association, gave in the two days' hearings before the House Finance Committee."

Among the items for which the appropriation will provide are a change-over from a 12 hour to an 8 hour day for

employees in state institutions, operating budgets for new units in several of the state hospitals, improvements in other units, and supplementary budgets to meet increased costs of food, fuel, and clothing.

A requested appropriation of \$25,000 for traveling mental hygiene clinics was denied on the ground that, according to the chairman of the House Finance Committee, they were "just a device to fill up mental hospitals."

It might also be added that "Bedlam, 1946," *Life Magazine's* article about Ohio's neglect of its mentally ill patients gave the leading organizations in the state ammunition for dramatizing the request for appropriations.

#### LIFE IS GOOD—EVEN WITH HANDICAPS

The American Red Cross has just released five pamphlets bound in as many colors designed to provide information for families and friends of veterans. The five subjects are: amputations, malaria, loss of hearing, loss of sight, and tuberculosis. In simple language these give the basic facts about these conditions and how the folks back home can help the returning veteran who is suffering from one of them, to lead a normal useful life despite the handicap. "The most important things in life are still his for the taking" is the golden text. These pamphlets should be in the hands of all families who have a returned veteran, or, in fact, any other member, suffering any one of these handicaps.

Prepared with the coöperation of the National Publicity Council the pamphlets are available from The American National Red Cross, Washington, D. C.

#### HOW TO BEAT ANTIVIVISECTION BILLS

The Medical Society of New York State has recently released a "Report on the Campaign Against Antivivisection Bills in the 1946 New York State Legislature." This is a very complete

and exciting report of the highly effective program of education and propaganda that went into high gear from the time of the first faint rumors of an impending bill down to its final defeat in the State Assembly. It is an impressive record of high-powered publicity on a mature intellectual level shared in by topflight physicians and scientists.

The report, together with reports of Bernard DeVoto's "The Easy Chair" discussion of the genus vivisectionist in *Harper's Magazine*, and Dr. Norman T. Kirk's "Mice—Or Men?" in *Collier's Weekly*, can be secured from the Society, 292 Madison Avenue, New York 17.

The agency through which this activity was carried on was organized as Friends of Medical Research. This has now become a national organization—the National Society for Medical Research, conducted under the auspices of the American Association of Medical Colleges. Its chairman is Anton J. Carlson, M.D., who is also chairman of the executive committee of the American Association for the Advancement of Science. The offices are located at 25 E. Washington Street, Chicago 2, and the Executive Director is Ralph A. Rohweder.

#### CHRISTIAN SCIENCE AND CHEST X-RAY SURVEYS

The National Tuberculosis Association is to be congratulated for having secured a clarification of the stand of Christian Scientists on chest surveys. Walter W. Kantack of the Christian Science Committee on Publications for the State of New York writes as follows:

Christian Science teaches that examining the body in a search to see whether or not disease is present can bring on disease. Accordingly, Christian Scientists object to any requirement that would compel them to undergo x-ray and other examination in a search for tuberculosis and other diseases. They do not object to ordinary sanitary regulations, nor do they object to quarantine and other measures for the protection of the

public when a so-called contagious disease is epidemic.

However, unless there is good reason to believe that they are affected with an ailment which may be harmful to others, they feel that their right of the free exercise of their religion should be respected and that they should not be forced to submit to unwarranted medical requirements. Their religion teaches them to give strict obedience to existing laws and regulations, but they object to the extension of these laws and regulations in a manner that involves them in mass examination and experimentation based on medical theories.

The foregoing is a statement of the position of Christian Scientists as a whole. However, each individual Christian Scientist is free to act according to the dictates of his conscience. If he personally has no objection to x-ray examination, he may submit to it. It is a matter for individual determination. On the other hand, if he objects to examination, he should not be compelled or coerced into it. No health program should have priority over religious rights.

The promotion of good health is our common aim. Though we proceed from different bases of thought, we can and I'm sure we do have a spirit of the greatest friendship and goodwill.

#### IDEAS FOR ACTION

Credit Lines has received Vol. 1 No. 1 (June, 1946) of the quarterly *Ideas for Action*, published by The Citizens' Social Research Council, a group of sociologists, writers, and researchers, whose stated purpose is to "provide ammunition needed to build a better democracy." They invite manuscripts and give practically unlimited rights to reprint.\* The first issue has, among other items, an article on The Health of the Farmer, by Dr. Bernhard J. Stern, reprinted from his recent book *American Medical Practice* (Commonwealth Fund). They also report on some recent polls on What Americans Think About Medical Care. *Ideas for Action* is 15 cents per copy, 50 cents per year; its Editor is Alvin W. Gouldner; its offices are at 110-34 73rd Road, Forest Hills, Long Island, N. Y.

#### SAFEGUARDS TO CHILD HEALTH

"Future Health for Your Child" is the title of a gay little folder prepared by the Lederle Laboratories (30 Rockefeller Plaza, New York 20). Its cover has blond and brunette, classic and snub-nosed little boys and girls and endearing babies with curling wisps of hair.

Inside, the gay colors and charming children are continued to illustrate the story, in simple language, of immunization procedures for smallpox, measles, scarlet fever, typhoid fever, virus influenza, common colds, diphtheria, tetanus, and whooping cough, and the tuberculin patch test for tuberculosis.

The universal chorus for each presentation is "Only your physician can protect your child against the common childhood infections!"

Lederle Laboratories is one of the Association's 36 sustaining members.

#### PILLS ARE NOT THE ROYAL ROAD TO HEALTH

The *Health Bulletin* of the Virginia Department of Health (June, 1946, Richmond, Va.) uses the famous "Acres of Diamonds" lecture as the springboard for a very well written article, the burden of whose tale is that the greatest of health fortunes lies largely within the individual. The brisk daily walk, the controlled intake of nutritive food, the nightly health quota of sleep, fresh air, stimulants limited to personal tolerances and keeping worry under control—these make for personal health. A very valuable reminder when commerce sings its siren song about pills and potions, fads and fancies. The really smart men and women refuse "to follow the commercial or well meaning will-o'-the-wisp that offers an unattainable personal vigor on an arm-chair basis."

#### LOCAL GOVERNMENT COÖPERATION IN RECREATION

In Lynwood, California (1940 popu-

lation, 11,000), the city and two school districts will jointly finance and manage all public recreation activities—parks, playgrounds, tennis court—through a nine member recreation commission made up of city and school officials plus three members at large. The city council will make all appointments to the recreation commission, with the school boards submitting candidates for their representatives. To coördinate the facilities of the city and the schools in a unified recreation program, the commission may adopt rules and regulations governing public recreation, may appoint a director of playground and recreation activities, and may contract with the school districts to supervise all recreation activities carried on within the school grounds.

#### HELP FOR ANNUAL REPORTS

It is not too late to make use of *Annual Reports: How to Plan and Write Them* in planning that annual report that should be ready for the printer soon after the first of the year. One of the How-to-do-it Series of the National Publicity Council, this 40 page pamphlet tells you about the organization of your material, the format, the use of statistics, and other pointers. Written by Beatrice K. Tolleris, Staff Consultant of the Council, it is as easy to read as she hopes your annual report will be.

#### ILLINOIS LEARNS MORE ABOUT MENTAL HYGIENE

The Illinois Society for Mental Hygiene (343 South Dearborn, Chicago) sent out an imaginative packet in April. Included with its monthly report for April was the annual report number of its *Mental Health Bulletin* entitled, "Mental Health in Prospect," a reprint of a series of graphic charts published by the *Chicago Sun* with the general title "Mental Illness—Today's Problem, Tomorrow's Deficit." This chart ought to stimulate a lot of other think-

ing caps in publicizing the need for a different approach to and better facilities for the care of mental illness. The last item in the packet directs attention to the March, 1946, issue of the *American Journal of Sociology: Reports by Twenty-three Social Scientists*. In these articles the psychiatric and psychological aspects of the services are dealt with as well as the changes in rôle that attend the return to civilian life.

#### STUDENTS HEAR ABOUT PUBLIC HEALTH

The Public Health issue of *Building America* packs more into its 30 pages than one would have thought possible in twice as many pages.

The "Milestones in the Development of Public Health in America" start with the 1647 law to prevent pollution of Boston Harbor and go up to the passage of the Public Health Act of 1944. Some of the items in between are the mandatory isolation of smallpox cases in Massachusetts in 1701, the first school of medicine in 1765, the first state board of health in 1869, the organization of the A.P.H.A. in 1872, the establishment of the Food and Drug Administration in 1907, and the first school of public health in 1913.

Short chapters on voluntary agencies, on public agencies, a brief analysis of the varied services and personnel contributing to public health, where we have come and what remains to be done—these complete the brief but nevertheless complete story. The whole is illustrated with pictures, old and new, and with pictorial charts. There are extensive footnote references and a good brief bibliography which includes the Gunn-Platt *Voluntary Health Agencies* report, Dr. Emerson's *Local Health Units for the Nation*, Dr. Mustard's *Government in Public Health*, as well as Dr. Stephen Smith's *The City That Was*, which is a dramatic account of New York City's Sanitary Survey of 1864.

The Association for Supervision and Curriculum Development of the National Education Association (140 North 6th Street, Philadelphia) is to be congratulated for getting this material into the blood stream of education in this country. Each issue of *Building America* is designed as a separate study unit for schools, colleges, youth organizations, and the general public. Each is a factual illustrated study of a modern problem. Among other titles presented during its 11 year history are Chemistry at Work, Food, Health, Housing, Physical Fitness, Recreation, Safety, and Social Security.

#### GOOD HEALTH SPRINGS FROM THE GOOD SOCIETY

"Good health and physical fitness make for economic and social progress, but there is still more causation in the opposite direction between these factors." So concludes Comparative Health Factors among the States, an article in the February, 1946, *American Sociological Review* (Jones Hall 108, University of Minnesota, Minneapolis, bi-monthly \$4 a year). Prepared by Gerhard Hirschfeld and Carl W. Strow, this article summarizes such factors as mortality rates, populations; sanitation, medical facilities, health insurance, economic resources, and cultural levels for the separate states, and attempts to rank the states as to health sanitation on the one hand and economic-cultural status on the other. Although the resulting ranks of the states are not identical for the two items, there is a high positive correlation of economic and cultural strength with good health. Hardly news, but bears frequent repetition and this is an interesting variation of an oft told tale.

#### TUBERCULOSIS IN INDUSTRY

The National Tuberculosis Association (1790 Broadway, New York 19) has just published a tentative edition of

*Tuberculosis and Industrial Employment*. This is described as "a code of fair employment practice and guide for industrial physicians." It was prepared by Dr. Oscar A. Sander for the Committee on Tuberculosis in Industry. In a preface Dr. Kendall Emerson hopes that the report sheds some light on placement questions arising from the use of mass radiography into industrial medical practice. The emphasis of the report is not upon keeping the tuberculous out of industry but upon proper placement and supervision.

Underlining the report's message is a leaflet, "*Put Them to Work!*" Included also is the 1946 revision of the National Tuberculosis Association's *bibliography on tuberculosis and related subjects*.

#### MENTAL PUBLIC HEALTH EDUCATION

The recently organized National Mental Health Foundation (P. O. Box 7574, Philadelphia 1) makes its bow in the health education world with the first in a series of popular educational presentations prepared for national distribution. They are:

*From Folly to Fetters to Freedom*—an 8 page pamphlet which gives an historical sketch of the care of the mentally ill and a challenge toward improved standards of care and treatment.

*If Your Child Is Slow*—an 8 page illustrated pamphlet designed for sympathetic guidance of friends and relatives of the mentally deficient child, and

*Will They Be Cured?*—a 4 page guide for persons interested in the mental health movement.

The first is a particularly effective thumbnail history of the long road from the days when man was mad because a demon had seized him, to the present when, among the enlightened of the world, mental illness is as free from moral connotations as any other.

The first two pamphlets are 8 cents each, the third 5 cents; each is less in



quantity. Other popular pamphlets are promised at an early date.

#### SWIMMING POOL STANDARDS

The current edition of *Swimming Pool Data and Reference Annual*, 1946, (Hoffman-Harris, Inc., New York, Price \$3.00) presents much of value to anyone considering the hygienic control, the operation and construction of swimming pools. The Recommended Standards for Design, Construction, Equipment and Operating of Swimming Pools, prepared by the Joint Committee on Bathing Places of the Conference of State Sanitary Engineers and the American Public Health Association is the leading section. Interspersed at appropriate paragraphs are the regulations of various states where such are not in general agreement with the standards recommended by the Joint Committee. Following this section are others dealing with engineering aspects of design, the operation, maintenance, and cost of swimming pools and desirable equipment. The value of swimming pools to a community and the use of swimming in convalescence are also discussed. A generous section of advertisements should prove of value to anyone interested in the procurement of services or equipment.

#### WEST VIRGINIA ANNUAL REPORT

The annual report of the West Virginia Department of Health for the year ending June 30, 1945, presents, among the recommendations of the Commissioner, J. E. Offner, M.D., the following:

1. Complete coverage of the state with full-time local health units staffed by qualified personnel
2. Revision of restrictive tax laws to permit adequate local financial participation in local health units
3. Passage of permissive legislation providing for the consolidation of county and city health departments

The Commissioner also recommends the creation of five new divisions in the

State Department of Health: Hospital and Medical Care, Mental Hygiene, Food and Drugs, Public Health Dentistry, Degenerative Diseases.

Among the public health laws passed by the 1945 legislature, as indicated in Dr. Offner's report, is one by which qualifications of applicants for the position of State Health Officer are to be obtained by the Governor from the State Medical Association.

#### ENVIRONMENTAL CONTROLS FOR INDUSTRIAL PROCESSES

A recently received volume should be of interest to anyone working in the control of environmental conditions in various phases of industrial hygiene. It consists of lectures presented at an In-service Training Course in Environmental Controls for Industrial Processes, October 2-4, 1945, at the School of Public Health, University of Michigan. It is liberally illustrated and there are many sketches and figures that assist in making the text clear and understandable.

Included among the lectures is one of a general nature outlining the general problems involved in the control of environmental factors presenting hazards in various industrial occupations. In addition, there are sections on ventilation including design and equipment. There are specific sections dealing with hazards in the welding industries, in metal cleaning processes, painting and electric plating. A final section deals with the general subject of industrial housekeeping and sanitation. Included among the lecturers at the Inservice Training Course were R. R. Sayers, W. N. Witheridge and Frank A. Patty, all Fellows of the A.P.H.A., and Thomas F. Mooney, member, A.P.H.A.

As long as the supply of the reports is available, copies can be obtained free of charge by writing to the School of Public Health, University of Michigan, Ann Arbor, Mich.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**Advancing Fronts in Chemistry: Vol. II, Chemotherapy.**—*Edited by Wendell H. Powers. New York: Reinhold Publishing Corp., 1946. 156 pp. Price, \$3.25.*

Dr. Neil E. Gordon arranged a symposium on chemotherapy in the spring of 1945 at Wayne University. This useful little volume contains six of the seven lectures in the series, the discussion by Dr. H. E. Carter of the University of Illinois on antibiotics unfortunately being omitted.

The general pattern of the reviews follows a historical survey of an interpretation of recent developments, and suggestions of unsolved problems. Photographs and biographical sketches of the authors add much to the attractiveness of the volume. The symposium includes the following subjects: Chemotherapy in Experimental Tuberculosis by W. H. Feldman of the Mayo Foundation Graduate School, University of Minnesota (20 pages); Synthetic Antispasmodics by F. F. Blicke of the University of Michigan (7 pages); Chemistry of the Sulfa Drugs by E. H. Northey of the Stamford Laboratories of the American Cyanamid Company (14 pages); The Antimalarial Problem by H. S. Mosher of Pennsylvania State College (18 pages); Organometallic Compounds as Chemotherapeutic Agents by C. K. Banks of Parke, Davis and Company, Detroit (34 pages); and Past Developments and Present Needs in the Chemotherapy of Parasitic Diseases by W. H. Wright of the National Institute of Health, Washington.

The authors are to be congratulated for their skill in surveying so success-

fully the significant current fields of chemotherapeutic interest. The volume is an excellent introduction to the important problems of modern chemotherapy, and it is a useful reference work for chemists, pharmacologists, and public health workers.

CHAUNCEY D. LEAKE

**Handbook of Industrial Psychology**—*By Mary Smith. New York: Philosophical Library, 1944. 304 pp. Price \$5.00.*

Dr. May Smith is well known for her researches and publications in connection with the Industrial Health Research Board of the Medical Research Council, Great Britain.

The preface points out that the book is intended to provide an introduction to the subject for those who are in some way responsible for others or have to get on with others. The 10 chapters comprise: Pioneer Work, a succinct review in 20 pages, back-trailing to the time of Galen; Fatigue in Industry; The Environment; Finding the Job for the Person and the Person for the Job; Time and Motion Study; Temperaments, Particularly the Nervous; Why We Work; Measures of Human Well-Being; General Hints on Methods of Investigating; and Conclusions—which briefly summarize the environmental and human causes underlying unrest in industry, stress certain urgent and difficult problems yet demanding attention, and end with two short quotations, one from a philosopher and the other from a business man.

The style is simple and clear and holds the attention of the reader who may or may not have formed some

definite idea about the human problems of work. Much thought has been given to brevity of statement, carefully selected examples of application, and quotations from persons in all levels of employment as well as authorities in industrial psychology.

Good binding, large type, logical arrangement of chapters in headings and subheadings, with references and footnotes at the bottoms of the respective pages, and pertinent cross-referencing assure easy reading. Certain data are given in a few brief tables. There are no illustrations. The Table of Contents is the key to the material—there being no index, which would necessarily be cumbersome were an attempt made to cover the very numerous topics in a summarizing work of this nature. Some doubtfully important criteria fail of mention, as decibels in the discussion on noise, and more on radiation in heating might have been included. Much American as well as Continental material is included with the extensive findings of Britishers. All who have to do with industry will find this a valuable volume.

EMERY R. HAYHURST

**Nomenclature of Pathogenic and Parasitic Organisms** — *Connecticut State Department of Health*, 1945. 66 pp. Free from publisher.

This manual lists the scientific names of pathogenic bacteria and parasites as used by the Connecticut State Bureau of Laboratories. The subject matter is divided into eight sections: bacteria, rickettsial organisms, fungi, protozoa, trematodes, cestodes, nematodes, and miscellaneous helminths. In each instance the selected name is followed by those synonyms most frequently used and by an adequate and unambiguous description of the organism. The author has followed *Bergey's Manual* with a few exceptions in naming the bacteria, and states that *Dodge's Med-*

*ical Mycology* has largely been used as authority for the fungi, yeasts and molds. In this latter section are to be found most of the deviations from accepted medical nomenclature, and many of the familiar names are listed only as synonyms, being replaced by more scientifically accurate terms. An excellent index lists both chosen names and synonyms. As Earle K. Borman states in his interesting preface, "Taxonomy may seem dry to many but it is certainly not static."

EDMUND K. KLINE

**Nursing and Nursing Education** — *By Agnes Gelines. New York: The Commonwealth Fund*, 1946. 72 pp. Price, \$1.00.

This book is a notable addition to the series of monographs on medical problems sponsored by the New York Academy of Medicine and the Changing Order. It depicts in succinct fashion past and emerging trends and problems in nursing and nursing education. Problems of supply and demand, personnel policies and standards of service, adjustments to shifting needs and opportunities, and financing of nursing service and nursing education are briefly but comprehensively discussed, and some recommendations made. This work has particular value in that it shows nursing "whole." The interrelationships of education and service, of community nursing in hospital and home, of professional and sub-professional nursing, of preparation and opportunities for professional service are all clearly shown. This should be thought provoking and informative reading for all nurses, for related professional workers and for the intelligent consumer of nursing care.

RUTH B. FREEMAN

**Corky, the Killer—A Story of Syphilis** — *By Harry A. Wilmer. New York: American Social Hygiene Association*, 1945. 67 pp. Price, \$1.00.

In this book an articulate microbe of the *Treponema pallidum* tribe describes what goes on from the start of a syphilitic infection and what may happen if proper treatment is not given.

Those who have read Dr. Wilmer's story of tuberculosis, *Huber the Tuber* (National Tuberculosis Association, 1942), will know what to expect. Lewis Carroll fans will find delight in the book. The uninitiated may expect information presented in a form that almost makes one feel sorry for the trials and tribulations of the villain.

The significance of Dr. Wilmer's method of health education is semantic. Corky, sitting on a cushion of grey matter and discussing strategy with "General Paresis," takes pathology out of the realm of abstraction. Microbial diseases, after all, are not entities as such but are the result of parasites in search of food.

Quoting Corky's working song:

"Oh, there ain't no match for a mucous patch

If you look all over the world.

The skin may blotch, the liver notch,  
The brain may shrivel and curl.

But for beauty pure, with deadly allure,  
And with stitches tightly bound,

There ain't no match for a mucous patch  
From here to Chancetown."

WILLIAM A. DOPPLER

**Eight Years of Public Health Work—Jones County, Mississippi, 1937-44—**By Harry E. Handley and Carolina R. Randolph. New York: Commonwealth Fund, 1946. 80 pp. Price, \$.50.

Health administrators will find an excellent story of the development of a well rounded health program and will find many interesting administrative devices in the pages of this report.

The purpose of the publication is, according to one paragraph, not to prove that lives have been saved, but to describe the organized program and activities that it is hoped will ultimately

achieve this objective. This is done admirably. Defects as well as progress are critically discussed.

Each section is accompanied by tables arranged in chronological fashion which contain pertinent statistical information. The tabular presentations are clear and concise. In the Appendix these are set forth in considerably greater detail. Any public health worker who has tried to evaluate his own program will quickly realize that a tremendous amount of constructive thinking has gone into the organization of the work and the recording of basic data which made this presentation possible.

WENDELL R. AMES

**Handbook for Nurses — Disaster Preparedness and Relief—**Washington, D. C.: American National Red Cross, 1945. 62 pp. Free from publisher.

If you have ever waked in the night and wondered what your share as a nurse would be in a local or national disaster, where you would report, what you would be expected to do and what policies regarding Red Cross procedure you would be expected to follow, you need only turn on your light and read the *Handbook for Nurses—Disaster Preparedness and Relief*, just published by the American Red Cross. Better still, read the pamphlet now in the daytime before your night fears materialize in your own locality and the telephone rings calling you to emergency duty.

For public health nurses responsible for a share in advance preparations and the setting up of disaster machinery, the reading of this booklet is practically a "standing order." Every rural nurse should have it on her desk.

DOROTHY DEMING

**A Textbook of Bacteriology and Immunology—**By Joseph M. Dougherty, Ph.D., and J. Lamberti, M.S. St.

*Louis: Mosby, 1946. 360 pp., 102 illus. Price, \$4.50.*

As a strong advocate of a broad and general scientific (biology, chemistry, and physics) background for pre-medical and pre-dental training, the reviewer is not in sympathy with this text or its aims. Due to its brevity and conciseness this book would make a better review text for those who had already completed a course in medical bacteriology than those entering the field. This same idea is mentioned in the introduction—"Even the more advanced student would be benefited by its lucid presentation of the fundamentals."

Many important phases of bacteriology, such as the electron microscope, enzymes, pleomorphisms and bacterial variation, biochemical activities and other interrelationships between the bacteria and their environment, are merely mentioned or conspicuous by their absence.

The text is illustrated with many pen-point drawings, many of which are unnecessary (bottles, pipettes, plates, etc.). The drawings of the microorganisms are too diagrammatic, not clearly labelled and do not present the microorganisms in their true perspective. They fall far short of the clear photomicrographs which copiously adorn the pages of the more modern textbooks of the bacteriology.

Compared with textbooks of general bacteriology such as Frobisher, Salle, Buchanan, and others, this book seems outdated and mediocre. Compared with textbooks of medical bacteriology such as Jordan and Burroughs, Zinsser and Bayne-Jones, Park, and Gay, this book simply does not rate.

—WILLIAM W. BROWNE

**New Drugs**—By Arthur D. Herrick. *New York: Revere Publishing Company, 1946. 319 pp. Price, \$4.00.*

With the passage of the Federal Food,

Drug and Cosmetic Act relating to new drugs, many questions have arisen in the minds of physicians, drug manufacturers, pharmacists, and all those concerned with safeguarding the consumer. In this book by Arthur D. Herrick, one finds an excellent discussion of the various topics that raise questions concerning the law.

It is extremely well written, clear and concise, and it is a book that should be available for consultation at all times by everyone concerned with new drugs. It is the only book of its kind published and it should receive enthusiastic reception.

CHESTER S. KEEFER

**Health and Physical Education in Small Schools**—By Lois Pedersen Broady and Esther French (2nd ed.). *Lincoln: University of Nebraska Press, 1946. 343 pp. Price, \$2.50.*

This book is a revision of the 1937 edition. The physical education material will be found very useful and practical for small schools. The book deals with physical education organization, class control, supervision, procedures and activities, and an interpretation of community relationships as these are concerned with physical education values. The health education contribution is a very small part of the book which is chiefly concerned with physical education.

NINA B. LAMKIN

**Principles of Dynamic Psychiatry**—By Jules Masserman, M.D. *Philadelphia: Saunders, 1946. 322 pp. Price, \$4.00.*

In the *Principles of Dynamic Psychiatry*, Dr. Masserman has written an introduction to the *Practice of Dynamic Psychiatry*, a second volume to follow. This first volume defines the scope of modern dynamic psychiatry and presents a critical analysis of the various theories of behavior. The second part of the work is concerned with the

reformulation and integration of these theories into what the author terms a "biodynamic organon of behavior." For the student of medicine, psychology or social work, this book brings together and critically analyzes the basic concepts of various schools of thought regarding human behavior. The author's general biodynamic theory of behavior is based on four general principles. (1) principles of motivation, (2) principles of experiential interpretation and adaptation; (3) principle of deviation and substitution, and (4) principle of conflict. The principles are illustrated with clinical material. There is an excellent bibliography and glossary. While this is an introductory work, it is not a popular presentation, but is what the author describes in the preface, a preparation for the clinical examination and treatment of behavior disorders. JAMES M. CUNNINGHAM

**Health Guide Units for Oregon Teachers (Grades 7-12)**—By Howard S. Hoyman. Prepared for Oregon State Department of Education in collaboration with the State Joint Committee for Health and Physical Fitness, 1946. 429 pp.

**Health Instruction—Tentative Manual—Elementary Schools—Prepared by the Health Subcommittee of the Oregon State Joint Committee for Health and Physical Fitness, State Department of Education, Salem, Oregon, 1945.** 105 pp.

These publications have been prepared in a carefully organized manner to assist teachers of Oregon in adapting their health instruction to meet the requirements of the new state law passed by the Oregon State Legislature in 1945. Both manuals include a series of health guide units which encompass a broad range of suggested objectives, basic content, activities, evaluation methods, and references. Particular emphasis has been given to the opportunities for

adaptation of health instruction to school, home, and community needs.

Areas of health instruction outlined include: personal hygiene, nutrition, mental health, first aid, safety education, communicable disease, physiology of exercise, community health and sanitation, structure and functions of the human body, and effects of alcoholic drinks, stimulants, and narcotics.

These publications contain a wealth of health instruction resource material which will be of interest to teachers, school administrators, and other professional workers associated with school health programs.

A. HELEN MARTIKAINEN

**Public Health—A Career with a Future—American Public Health Association, 1946.** 29 pp. Price, \$.10.

Addressing ourselves to a college freshman:

We: "How would you like to become a parasitologist, a sanitary engineer, a record analyst, a public health nurse, a health educator, a health officer?"

Answer—He or she: "What do these people do, how does one prepare for such positions, how much salary do they get, are there positions waiting?"

We: "Here are the answers in this new pamphlet of the American Public Health Association."

The attractions of a public health career are here presented pictorially and with a flare in clearly understandable language. College students, and in fact high school students, should find this description of considerable assistance in solving that most perplexing problem of what to do and what extra training is needed for the working years ahead. Physicians, dentists, and engineers outside the field of public health may also gain a very good idea of the opportunities afforded and the nature of the work in this field.

Specific sections are devoted to 18

types of positions, with brief mention of the demands for personnel, the educational qualifications, and the range of salaries to be expected. About the only one left out is the veterinarian. Lists are given of the schools offering graduate training in a number of professional fields, and also a table showing what kinds of positions are open to people with different types of training. Further elucidation of public health practice is provided through a list of appropriate journals and books.

This 29 page pamphlet is a revised form of a previous publication of the Association entitled, "Employment Opportunities in Public Health." The new issue, as well as its predecessor, is a valuable booklet that serves a definite need. It ought to have wide circulation in high schools, vocational schools, colleges, universities, and professional schools.

There is room for many more people in public health. The fact ought to be widely heralded, and a booklet of this type is a most useful tool to this end.

GEORGE T. PALMER

**How Heredity Builds Our Lives—**  
*By Robert C. Cook and Barbara S. Burks. Washington, D. C.: American Genetic Association, 1945. 64 pp. Price, \$.75.*

The public needs information on eugenic practices. But the study of human genetics has become such a highly specialized science that there have been few attempts to interpret its facts into the simple language of public health education. The authors of this booklet have made an effort to present the facts of human heredity as an "Introduction to Human Genetics and Eugenics." Dr. Burks completed her training in psychology at Stanford University and was Associate in Psy-

chology, Columbia University, until her death in 1943. The manuscript has been completed by Dr. Cook, Managing Editor of the *Journal of Heredity*.

The sections on heredity and environment are similar to, but more up-to-date than the material presented in Jennings' book. The section on eugenics is especially valuable to those who already have some background in this important subject. As a device for public health education, the usefulness of the monograph is limited since it does not help much with the problem of improving eugenic practices. CHARLES E. SHEPARD

**Good Food and Nutrition for Young People and Their Families—**  
*By Edna P. Amidon, Dorothy E. Bradbury, and Vivian V. Drenckhahn. New York: Wiley, 1946. 323 pp. Price, \$1.96.*

It is the hope of the authors that this book will lead young people and their families to a better understanding of the importance of good nutrition for everyone. In a delightfully humorous way, the essentials of nutrition, their application to real living and the methods by which improvement can be accomplished are given to the student reader.

Real people are shown meeting real problems, and the basic material needed to solve those problems is simply and effectively presented. The laboratory for the student is found in his home, his school, and his community.

The book is topically well organized, and in such fashion that there is a pattern presented to fit the ambitions of every reader. Terminology and captions are in the world of youth. The leader working with young people's groups, as well as the group members, will profit much from using all or part of this text. FREDERICA L. BEINERT

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**City Health Officers Report—** Typhoid fever deaths continue to go down. In 1942 there were 31 large cities reporting none within the past two or more years: in 1945 this encouraging record had been achieved by 41. Improvement has been general throughout the country.

ANON. Typhoid in the Large Cities of the United States in 1945. J.A.M.A. 131, 10:817 (July 6), 1946.

**Ideals vs. Practicalities —** Compared to the Committee-on-Local-Health-Unit's standards, half of the health departments covered in this survey have less than the suggested minimum staff. The average ratio of population to graduate nurses is twice that recommended by the committee.

ALTENDERFER, M. E. Full-time Public Health Positions in Local Health Departments. Pub. Health Rep. 61, 24:866 (June 14), 1946.

**Meet a Modern Mr. Malthus—** British scientific papers are as long on philosophy as ours are on technologies. This English M.O.H. takes several pages out of Malthus—whom, he observes, many criticise but few read—and by them he comes to the rather gloomy conclusion that modern public health will continue to make life comfortable "during the *few* remaining generations of existence in (western civilization's) *present* form." A few good, old-fashioned "Black Deaths" might be a good thing, he seems to feel, because they tend to wipe out a lot of mental and physical weaklings whom we coddle through life.

BOWES, G. K. Epidemic Disease: Past, Present and Future. J. Roy. San. Inst. 66, 3:174 (July), 1946.

**Last Year's Polio Record—**In 1945, there were 13,514 cases of polio

reported, the third successive year above normal expectancy. Distribution was characterized by a large number of small epidemics spread over all sections of the country.

DAUER, C. C. Incidence of Poliomyelitis in the United States in 1945. Pub. Health Rep. 61, 25:915 (June 21), 1946.

**Where the Lion Lies Down with the Lamb—**Briefly outlined here are the provisions of the (British) National Health Service Bill. Nearing enactment now, it is to be put into effect presumably, in 1948. Apparently everyone concerned—including the BMA—accepts the principle of the thing. The secretary of that Association is quoted as concluding, "Mr. Bevan's bill, in short, is a good bill." (The Government "White Paper" which describes in detail the provisions of this bill is reprinted in the British Medical Journal No. 4447 of March 30, 1946. With it are 30-odd changes the BMA would like to see made in the bill before it becomes law.)

DAVIS, M. M. John Bull Plumps for Health. Survey Graphic. 35, 7:264 (July), 1946.

**Shape of Big Things To Come—**One of the charter objectives of the UN is the solution of international health problems. The proposed program for a new world-wide health organization is described.

DOULL, J. A. The World Health Organization of the Future. Canad. Pub. Health J. 37, 6:220 (June), 1946.

**Despite Penicillin —**"... the war taught us precisely nothing fundamental about venereal\* disease control that we did not know before the war." It is still true that as long as gonorrhea and syphilis remain infectious, venereal



diseases will spread, and the only way to eliminate venereal diseases is to find and treat infected individuals. The author then proceeds to mull over some bizarre plans. We must "grow accustomed to fantastic ideas" he says. You had better start the process for your own mind by reading this paper.

DRAPER, W. F. Wartime Lessons in Venereal Disease Control. *J. Social Hyg.* 32, 4:185 (Apr.), 1946.

**This Is How It Works**—One of the two local health councils dubbed "outstanding" in the G-P report is the Public Health Federation of Cincinnati. A coordinating committee of 50 meets once a month to settle the city's current health conflicts. A baker's dozen of specialty sub-councils, each composed of professional and interested lay workers, take over the working relationships in the various disease preventive and health building programs.

GROOM, W. S. The Health Council. *Health and Phys.-Educa.* 17, 6:332 (June), 1946.

**You'll Want To See These Pictures**—By means of high speed photography it is revealed that common laboratory operations often produce bacterial contamination of the surrounding air. Photographs, reminiscent of the much-publicized M.I.T. sneeze, show what happens when the last drop is blown from a pipette, or when a tight cork is pulled out of a bottle.

JOHANSSON, K. R., and FERRIS, D. H. Photography of Airborne Particles During Bacteriological Plating Operations. *J. Infect. Dis.* 78, 3:238 (May-June), 1946.

**Repeat Chest X-rays**—Resurveyed after 18 months, a plant with a stable employee population provided an opportunity to assess the value of follow-up chest x-rays. An appreciable proportion of missed cases was revealed, but so few new infections were uncovered that the procedure is questionable from that standpoint. Routine examination of all new employees is, of course, de-

sirable. It seems that the old employees themselves like the idea of rechecks.

KRAMER, M., *et al.* An Evaluation of a Chest X-ray Resurvey of an Industrial Plant. *Pub. Health Rep.* 61, 27:990 (July 5), 1946.

**Fat Will Get You!**—Overweight, transient hypertension, or transient tachycardia lead to cardiovascular diseases. If you have all three, or even two, watch out!

LIPP, R. L., *et al.* Overweight. *J. A.M.A.* 131, 12:951 (July 20), 1946.

**As Others See Us**—With commendable British caution this M.O.H. goes thoroughly into the matter of American experience with pertussis vaccine and concludes that what is most needed over-seas is a full-scale field trial there. This evaluation of our exuberant experimentation should be of some significance—though I am not sure what.

LEWIS, J. T. Immunization Against Whooping Cough: A Review. *Med. Officer.* 76, 1 (July 6), 1946.

**"We Are Not a People Who Take Self-Denial Easily"**—A psychiatrist takes a rather dim view of the prospects of improving venereal disease control through social hygiene. Men and women with normal sex drives, with little experience in self-denial, with lessening fear of the consequences, under constant stimulation from their surroundings are going to continue to risk infection despite information, repressed prostitution, and improved treatment.

LUEHR, L. E. Moral and Psychologic Aspects of the Control of Venereal Disease. *New York State J. Med.* 46, 13:1451 (July 1), 1946.

**Prone Pressure or What-Have-You**—Some tests on anesthetized subjects convince these British researchers that the choice of method of resuscitation is of less importance than the maintenance of a clear airway. If the subject is dead no method will bring him

back to life. If there is a spark in him, then any method properly carried out will probably suffice.

MACINTOSH, R. R., and MUSKIN, W. W. Pulmonary Exchange during Artificial Respiration. *Brit. M. J.* No. 4458 (June 15), 1946.

**Pertussis Agglutinogen Skin Test**—A new skin test is offered, the purpose of which is to determine the immunity status of the infant vaccinated against whooping cough. A negative response indicates the need for a second series.

SAUER, L. W., and MARKLEY, E. D. Whooping Cough. *J.A.M.A.* 131, 12:967 (July 20), 1946.

**Ersatz Protein**—When you read imaginative dissertations on the "food yeast" solution of our nation's nutritional problems, take the stories with a grain of salt the size of a boulder. It seems that yeast protein is readily digested by the rat, but the findings of

its nutritive values for man are not consistent. "Yeast steak" protein is inferior to beef steak's so apparently we shall be forced to continue to lean on our temperamental stock raisers and meat packers for that essential foodstuff.

VON LOESECKE, H. W. Controversial Aspects: Yeast in Human Nutrition. *J. Am. Dietet. A.* 22, 6:485 (June), 1946.

**The Englishman and His Freedom**—Our British brethren debate the virtues of compulsory reporting and treatment of venereal diseases. Apparently most of the discussants felt it to be an unwarranted intrusion upon the Englishman's inviolable freedom—to have venereal disease and to pass it on to whom he wishes. The principal proponent pointed out that the Swedes, who also love liberty, found compulsion acceptable.

WILSON, J. G., *et al.* The Compulsory Notification and Treatment of Venereal Disease. *J. Roy. San. Inst.* 66, 3:184 (July), 1946.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

ANNUAL REPORTS—HOW TO PLAN AND WRITE THEM. By Beatrice K. Tolleris. New York: National Publicity Council, 1946. 39 pp. Price, \$1.00.

CASUALTY WORK FOR ADVANCED FIRST-AID STUDENTS. By A. W. MacQuarrie, M.D., Ch.B. Edinburgh: E. & S. Livingstone, Ltd. (Imported by The Peter Reilly Co., Philadelphia.) 1944. 231 pp.

CITIES ARE ABNORMAL. Edited by Elmer T. Peterson. Norman, Oklahoma: Univ. of Oklahoma Press, 1946. 263 pp. Price, \$3.00.

THE COMMISSION FOR HANDICAPPED CHILDREN—Reports to the People of Illinois, June, 1941–June, 1946. Illinois Commission for Handicapped Children, 1946. 24 pp.

COUNSELING IN THE YWCA. By Tirzah Waite Anderson. New York: Woman's Press, 1946. 39 pp. Price, \$.50.

CURRENTS IN BIOCHEMICAL RESEARCH. Edited by David E. Green. New York: Interscience Publishers, Inc., 1946. 486 pp. Price, \$5.00.

DIABETIC CARE IN PICTURES. By Helen Rosenthal, B.S., Frances Stern, M.A., and Joseph Rosenthal, M.D. Philadelphia: Lippincott, 1946. 150 pp. 137 illus. Price, \$2.00.

EXPERIMENTAL HYPERTENSION. Vol. III. Special Publications of the New York Academy of Sciences. New York: New York Academy of Sciences, 1946. 179 pp. Price, \$3.75.

ENZYMES AND THEIR ROLE IN WHEAT TECHNOLOGY. Edited by J. Ansel Anderson. New York: Interscience Publishers, Inc., 1946. 371 pp. Price, \$4.50.

FEES AND FEE BILLS: Some Economic Aspects of Medical Practice in Nineteenth Century America. Supplements to the Bulletin of the History of Medicine. No. 6. By George Rosen, M.D., Ph.D. Baltimore: Johns Hopkins Press, 1946. 93 pp. Price, \$1.50.

THE GOVERNING BOARD OF THE HOSPITAL (20¢) MEASURING THE COMMUNITY FOR A HOSPITAL (25¢); ORGANIZATION OF THE MEDICAL STAFF OF THE HOSPITAL (20¢).

- Chicago: American Hospital Association, 1945.
- THE HEALTH OF THE SCHOOL CHILD. By Gertrude E. Cromwell, R.N., M.S. Philadelphia: Saunders, 1946. 256 pp. 46 illus. Price, \$2.50.
- HOUSING AND CITIZENSHIP. By George Herbert Gray. New York: Reinhold Publishing Corp., 1946. 254 pp. Price, \$7.50.
- J. F. SUTHERLAND'S FIRST AID. 43rd ed. Revised and rewritten by Halliday Sutherland, M.D. Edinburgh: E. & S. Livingstone, 1941. (Imported by The Peter Reilly Co., Philadelphia.) 77 pp. Price Sixpence net.
- JUVENILE DELINQUENCY AND THE SCHOOL. By William C. Kvaraceus. Yonkers-on-Hudson: World Book Company, 1946. 337 pp. Price, \$2.28.
- MEDICAL CARE FOR THE PEOPLE OF NEW YORK STATE—Report of the New York State Legislative Commission on Medical Care. By Paul A. Lembecke, M.D., M.P.H., Director of Study. Commission on Medical Care, 1946. 504 pp.
- MICROANALYSIS OF FOOD AND DRUG PRODUCTS. Prepared by Food and Drug Administration. Washington: U. S. Gov. Ptg. Office, 1944. 171 pp. Price, \$3.00.
- MICROBIOLOGY AND PATHOLOGY FOR NURSES. By Mary Elizabeth Morse, Martin Frobisher, Jr., and Coleman B. Rabin. 2nd ed. Philadelphia: Saunders, 1946. 758 pp. 282 illus. Price, \$3.50.
- MIRACLES FROM MICROBES. By Samuel Epstein and Beryl Williams. New Brunswick: Rutgers Univ. Press, 1946. 155 pp. Price, \$2.00.
- MOTOR DISORDERS IN NERVOUS DISEASES. By Ernst Herz, M.D., and Tracy J. Putnam, M.D. New York: King's Crown Press, 1946. 184 pp. Price, \$3.00.
- THE MUNICIPAL YEAR BOOK—1946. Edited by Clarence E. Ridley and Orin F. Nolting. Chicago: International City Managers' Association, 1946. 593 pp. Price, \$8.50.
- OUT OF CARNAGE. By Alexander R. Griffin. New York: Howell, Soskin, 1946. 327 pp. Price, \$3.00.
- PEPTIC ULCER—ITS DIAGNOSIS AND TREATMENT. By I. W. Held, M.D., and A. Allen Goldbloom. Springfield, Ill.: Thomas, 1946. 383 pp. Price, \$6.50.
- PLANS FOR AN INSTITUTION FOR THE TREATMENT OF EMOTIONALLY DISTURBED CHILDREN. Chicago: The Illinois Children's Home and Aid Society, 1946. 52 pp. Price, \$5.00.
- PREPAYMENT MEDICAL CARE ORGANIZATIONS. 3rd ed. Bureau Memorandum No. 55. By Margaret C. Klem. Washington: U. S. Gov. Ptg. Office, 1945. 148 pp. Price, \$25.
- PSYCHIATRY FOR SOCIAL WORKERS. By Lawson G. Lowry, M.D. New York: Columbia University Press, 1946. 336 pp. Price, \$3.50.
- PSYCHOLOGY—PRINCIPLES AND APPLICATIONS. By T. L. Engle, Ph.D. Yonkers-on-Hudson: World Book Company, 1945. 549 pp. Price, \$2.20.
- QUESTIONS AND ANSWERS ABOUT YOU. By Tirzah Anderson and Winnifred Wygal. New York: Woman's Press, 1946. 32 pp.
- RULES AND REGULATIONS FOR THE CONTROL OF COMMUNICABLE DISEASES. Compiled by Jerome J. Sievers, M.D. Illinois State Department of Health, 1945. 89 pp.
- STANDARDS AND RECOMMENDATIONS FOR HOSPITAL CARE OF MATERNITY PATIENTS (Publication No. 314). U. S. Dept. of Labor, Children's Bureau. Washington: U. S. Gov. Ptg. Office, 1946. 22 pp. Price, \$1.00.
- STATISTICS OF MEDICAL SOCIAL CASEWORK IN NEW YORK CITY: 1945. By Ralph G. Hurlin. New York: Russell Sage Foundation, 1946. 31 pp. Price, \$2.50.
- THE STUDENTS POCKET PRESCRIBER. 12th ed. By David Mitchell MacDonald, M.D. Edinburgh: E. & S. Livingstone, Ltd., 1945. (Imported by The Peter Reilly Co., Philadelphia.) 348 pp. Price, \$1.25.
- SEX PROBLEMS OF THE RETURNED VETERAN. By Howard Kitching, M.D. New York: Emerson Books, Inc., 1946. 124 pp. Price, \$1.50.
- THE VENEREAL DISEASES—A Manual for Practitioners and Students. By James Marshall. New York: Macmillan, 1946. 348 pp. Price, \$4.50.
- WHY CHILD LABOR LAWS. By Lucy Manning. U. S. Dept. of Labor, Children's Bureau. Washington: U. S. Gov. Ptg. Office, 1946. 13 pp.
- YOUR BALANCE—WORTH KEEPING. By Helen F. Southard. New York: Woman's Press, 1946. 36 pp. Price, \$1.00.
- Jones, M.D. New York: Commission for the Blind, State Department of Social Welfare.
- THE EYES OF INDUSTRY. By Leonard W. fare. Free in New York State.
- THE FEVER BARK TREE. By M. L. Duran-Reynals. New York: Doubleday & Company, Inc., 1946. 274 pp. Price, \$2.75.
- HOME ECONOMICS. Vocational and Professional Monographs No. 66. By Katherine T. Healey. Boston: Bellman Publishing Co., 1946. 24 pp. Price, \$75.

## ASSOCIATION NEWS

SEVENTY-FOURTH ANNUAL MEETING  
AMERICAN PUBLIC HEALTH ASSOCIATION  
CLEVELAND, OHIO — NOVEMBER 12-14

*Meetings of Related Organizations—November 11*

## RAILROAD FARES FROM VARIOUS POINTS TO CLEVELAND, OHIO

*American Public Health Association  
November 12-14, 1946*

<i>From</i>	<i>One-way for Pullman Travel</i>	<i>Round Trip for Pullman Travel</i>	<i>One-way Lower Berth</i>	<i>One-way Upper Berth</i>
Atlanta, Ga.	\$24.20	\$42.70	\$6.40	\$4.85
Baltimore, Md.	14.14	27.10	3.50	2.65
Boston, Mass.	22.50	41.75	4.95	3.75
Buffalo, N. Y.	6.11	12.05	2.95	2.20
Chicago, Ill.	11.66	22.45	2.95	2.20
Dallas, Tex.	39.62	66.30	10.40	7.95
Denver, Colo.	45.83	73.70	11.30	8.60
Duluth, Minn.	26.70	45.05	6.40	4.85
Fort Worth, Tex.	39.62	66.30	10.40	7.95
Indianapolis, Ind.	9.41	18.35	2.95	2.20
Jacksonville, Fla.	35.86	62.55	9.25	7.05
Kansas City, Mo.	26.44	45.20	6.40	4.85
Louisville, Ky.	12.32	22.90	3.60	2.85
Los Angeles, Calif.	84.48	121.80	20.80	15.85
Memphis, Tenn.	24.86	43.80	6.95	5.30
Milwaukee, Wis.	14.47	26.70	3.60	2.85
Minneapolis, Minn.	25.09	42.65	5.80	4.40
Nashville, Tenn.	18.48	33.20	5.25	4.00
New Orleans, La.	36.25	62.80	9.25	7.05
New York, N. Y.	18.81	35.30	4.35	3.30
Omaha, Nebr.	28.09	47.15	6.40	4.85
Philadelphia, Pa.	15.84	30.15	3.50	2.65
Pittsburgh, Pa.	4.35	8.65	2.35	1.80
Portland, Ore.	82.43	121.80	20.80	15.85
Salt Lake City, Utah	60.93	96.40	14.75	11.25
San Francisco, Calif.	84.48	121.80	20.80	15.85
Seattle, Wash.	82.43	121.80	20.80	15.85
St. Louis, Mo.	17.60	33.25	4.35	3.30
Washington, D. C.	14.14	27.10	3.50	2.65
Montreal, Que.	20.50	37.95	4.95	3.75
Halifax, N. S.	41.85	72.55	9.70	7.55
Ottawa, Ont.	18.39	34.20	4.95	3.75
Quebec, P. Q.	26.15	48.10	6.20	5.05
Toronto, Ont.	9.89	18.90	2.95	2.20
Vancouver, B. C.	82.43	121.80	21.20	16.10

NOTE: Add 15 per cent Government tax to all fares

RATES QUOTED BY CLEVELAND HOTELS

Seventy-Fourth Annual Meeting, November 12-14, 1946

AMERICAN PUBLIC HEALTH ASSOCIATION

ALL RATES QUOTED ARE FOR ROOMS WITH BATH  
ON EUROPEAN PLAN

NOTE: Double rooms are easier to secure than single

Hotel	No. of Rooms	Single	Double
Alcazar	300	\$3.00	\$5.00
Allerton	550	2.50-3.00	3.50- 5.00
Auditorium	300	2.00-3.50	4.00- 7.00
Bolton Square	284	2.50-3.00	3.50- 6.00
Carter	600	3.00-6.00	4.50- 9.00
Cleveland	1,000	3.00-7.00	4.50-12.00
Hollenden	1,000	3.00-5.00	4.50-12.00
New Amsterdam	250	2.00-3.00	3.50- 6.00
Olmsted	250	2.00-3.50	3.50- 7.00
Statler	1,000	3.00-6.00	5.00- 8.00
Wade Park Manor	400	3.50-5.00	5.50- 9.00

.....(Cut off on this line and mail to the hotel of your choice).....

HOTEL RESERVATION BLANK FOR THE CLEVELAND MEETING  
AMERICAN PUBLIC HEALTH ASSOCIATION, NOVEMBER 12-14, 1946

To .....  
(Name of Hotel)

Please reserve for me ..... rooms for ..... persons  
for the A.P.H.A. Meeting.

Single room ..... Double room .....

Maximum rate per day for room \$...... Minimum rate per day for room \$.....

I expect to arrive ..... If date of arrival is changed I will notify  
you at least 24 hours in advance.

Please acknowledge this reservation.

Name .....

Street Address .....

City..... State.....

Mail directly to the hotel of your choice

## NOMINATIONS FOR THE GOVERNING COUNCIL

In accordance with the By-laws of the Association, the Nominating Committee for Governing Council Members consisting of one Fellow elected by each Section and a Chairman appointed by the Executive Board, reports the following nominations for the Governing Council. The By-laws provide that "upon the petition of twenty-five Fellows, the Nominating Committee shall add the name of any Fellow to this list, provided such petition is received fifteen days before the Annual Meeting." The Chairman of the committee is J. J. Bloomfield, Industrial Hygiene Division, U. S. Public Health Service, Bethesda, Md. The other members are: Gregoire F. Amyot, M.D., Health Officers Section; Earnest Boyce, C.E., Engineering Section; John W. Fertig, Ph.D., Vital Statistics Section; Benjamin G. Horning, M.D., Public Health Education Section; Albert C. Hunter, Ph.D.,\* Food and Nutrition Section; Mac H. McCrady, Laboratory Section; George A. Nevitt, D.D.S., Dental Health Section; C. O. Sappington, M.D., Industrial Hygiene Section; Marion W. Sheahan, R.N., Public Health Nursing Section; Charles E. Smith, M.D., Epidemiology Section; Susan P. Souther, M.D., Maternal and Child Health Section; Mary M. Wyman, School Health Section.

Ordinarily, ten of the thirty elective members of the Council are elected each year. In the absence of an Annual Meeting in 1945, however, there are twenty vacancies to be filled this year, ten with terms expiring in 1948, and ten with terms expiring in 1949. The twenty Fellows receiving the highest number of votes on a written ballot cast by the Fellows present and voting at

the Annual Meeting in Cleveland will be elected to fill these terms.

Gaylord W. Anderson, M.D.  
University of Minnesota  
Minneapolis, Minn.

Edgar C. Barnes  
Westinghouse Electric and Mfg. Company  
East Pittsburgh, Pa.

Stanhope Bayne-Jones, M.D.  
Yale University  
New Haven, Conn.

Albert E. Berry, Ph.D.  
Department of Health  
Toronto, Ontario, Canada

Maud A. Brown  
State Department of Health  
Helena, Mont.

George D. W. Cameron, M.D.  
Department of Pensions and National Health  
Ottawa, Ontario, Canada

A. J. Chesley, M.D.  
State Board of Health  
St. Paul, Minn.

H. Trendley Dean, D.D.S.  
National Institute of Health  
Bethesda, Md.

Harold S. Diehl, M.D.  
University of Minnesota  
Minneapolis, Minn.

Robert Dyar, M.D.  
State Department of Public Health  
San Francisco, Calif.

I. S. Falk, Ph.D.  
Social Security Board  
Washington, D. C.

Katherine Faville, R.N.  
Wayne University  
Detroit, Mich.

Roy F. Feemster, M.D.  
State Health Department  
Boston, Mass.

Carl R. Fellers, Ph.D.  
Massachusetts State College  
Amherst, Mass.

Lloyd Florio, M.D.  
University of Colorado  
Denver, Colo.

\* Marietta Eichelberger, Ph.D., acted as alternate for Dr. Hunter, deceased.

Mary D. Forbes, R.N.  
U. S. Public Health Service  
New Orleans, La.

William G. Frederick, Sc.D.  
Department of Health  
Detroit, Mich.

A. W. Fuchs  
U. S. Public Health Service  
Washington, D. C.

Edna A. Gerken  
U. S. Office of Indian Affairs  
Denver, Colo.

Albert S. Gray, M.D.  
State Department of Health  
Hartford, Conn.

Jean Gregoire, M.D.  
Ministry of Health  
Quebec, P.Q., Canada

Adelard Groulx, M.D.  
Department of Health  
Montreal, Quebec, Canada

Ruth E. Grout, Ph.D.  
University of Minnesota  
Minneapolis, Minn.

John F. Hackler, M.D.  
University of Oklahoma  
Oklahoma City, Okla.

George A. Hays, M.D.  
Hurley Hospital  
Flint, Mich.

Lyman D. Heacock, D.D.S.  
National Institute of Health  
Bethesda, Md.

A. W. Hedrich, Sc.D.  
State Department of Health  
Baltimore, Md.

Ira V. Hiscock, Sc.D.  
Yale University  
New Haven, Conn.

Alice Miller Johnson  
U. S. Public Health Service  
Washington, D. C.

Marie L. Johnson, R.N.  
Metropolitan Life Insurance Company  
New York, N. Y.

Robert A. Kehoe, M.D.  
University of Cincinnati  
Cincinnati, Ohio

Pearl L. Kendrick, Sc.D.

Department of Health Laboratories  
Grand Rapids, Mich.

M. R. Kinde, M.D.  
W. K. Kellogg Foundation  
Battle Creek, Mich.

H. A. Kroeze  
State Board of Health  
Jackson, Miss.

James P. Leake, M.D.  
U. S. Public Health Service  
Washington, D. C.

Hugh R. Leavell, M.D.  
Rockefeller Foundation  
New York, N. Y.

Roland H. Loder, M.D.  
State Department of Health  
Lincoln, Nebr.

Willard F. Machle, M.D.  
610 Park Avenue  
New York, N. Y.

Bleecker Marquette  
Public Health Federation  
Cincinnati, Ohio

John T. Marshall  
Dominion Bureau of Statistics  
Ottawa, Ontario, Canada

Anna R. Moore, R.N.  
State Department of Health  
Seattle, Wash.

Lucy S. Morgan, Ph.D.  
University of North Carolina  
Chapel Hill, N. C.

Carl N. Neupert, M.D.  
State Health Department  
Madison, Wisc.

C. L. Outland, M.D.  
Richmond Public Schools  
Richmond, Va.

George T. Palmer, Dr.P.H.  
U. S. Public Health Service  
Washington, D. C.

Emil E. Palmquist, M.D.  
Public Safety Building  
Seattle, Wash.

James E. Perkins, M.D.  
State Department of Health  
Albany, N. Y.

Sol Pincus, C.E.  
New York City Health Department  
New York, N. Y.

Domingo F. Ramos, M.D.  
Calle 28, No. 62 Miramar  
Havana, Cuba

Esther L. Richards, M.D.  
The Johns Hopkins Hospital  
Baltimore, Md.

Henry T. Scott, Ph.D.  
University of Wisconsin Alumni Research  
Foundation  
Madison, Wisc.

Raymond Van Buren Stone, D.V.M.  
Department of Health  
Los Angeles, Calif.

Fred W. Tanner, Ph.D.  
University of Illinois  
Urbana, Ill.

Felix J. Underwood, M.D.  
State Board of Health  
Jackson, Miss.

Milton V. Veldee, M.D.  
National Institute of Health  
Bethesda, Md.

Adolph Weinzirl, M.D.  
University of Oregon  
Portland, Ore.

A. H. Wieters  
State Department of Health  
Des Moines, Iowa

Carl A. Wilzbach, M.D.  
Department of Health  
Cincinnati, Ohio

J. M. Wisan, D.D.S.  
State Department of Health  
Trenton, N. J.

William P. Yant  
Mine Safety Appliance Company  
Pittsburgh, Pa.

#### DR. MILTON TERRIS APPOINTED MEDICAL ASSOCIATE

The Executive Board of the American Public Health Association has announced the appointment of Milton Terris, M.D., M.P.H., as Medical Associate on the staff of the Subcommittee on Medical Care, a subcommittee of the Committee on Administrative Practice. Dr. Terris commenced his duties on September 1, 1946, and will have his offices with those of the Subcommittee on Medical Care in Bethesda, Md.

Dr. Terris is a graduate of Columbia College and the New York University College of Medicine. He received the M.P.H. degree from Johns Hopkins University in 1944 and has served as Assistant District Health Officer with the New York State Department of Health, most recently in the Buffalo office.

The responsibilities of Dr. Terris will be those of technical medical adviser to the Subcommittee on Medical Care on questions relative to the medical care study. One of his first assignments will be participation in a study of the

medical care program now being conducted by the State of Maryland. He will be associated with Howard M.



*Milton Terris*

Kline, Ph.D., Technical Secretary to the Subcommittee on Medical Care, whose appointment was announced in the April *Journal*.



## CHARLES B. FRASHER

The Executive Board of the American Public Health Association has announced the appointment of Charles B. Frasher of Philadelphia, Pa., as Field Consultant of the Merit System Unit.

Urgent demands for assistance from states and from local health departments where it is desired to establish merit systems prompted the Executive Board to seek funds for such assistance from the National Foundation for Infantile Paralysis, Inc.

Mr. Frasher will supply field consultation to health authorities on merit system, civil service, and personnel problems. He will also offer liaison service between the Association's Unit and the official and voluntary agencies that can unlock the potential demand from localities, interpret the developments in this specialized area to public health workers and their employees, make contacts to accelerate the evaluation of testing materials, assist in organizing groups of contributors in the field for new examination items and their review, and discover areas of special need where the application of these methods will improve the quality of health services affecting poliomyelitis and other diseases.

Mr. Frasher holds Master's Degrees in Psychology and in Education from the University of Pennsylvania and Springfield College, and is a candidate for the degree of Doctor of Philosophy at the University of Pennsylvania. He

has been Dean of Freshmen at Springfield College and Assistant to the Director of Personnel at the University of Pennsylvania. He organized and de-



*Charles B. Frasher*

veloped the Merit System Unit for the Pennsylvania Department of Health and later joined the Merit System Staff of the Children's Bureau, Department of Labor, prior to entering the army.

His army assignments included that of liaison Officer and instructor with the French School of Military Government, and Manpower Officer with the 6th Army Group Headquarters, the 7th Army Headquarters, and the Office of Military Government, Western District.

ACCREDITATION OF VANDERBILT UNIVERSITY SCHOOL OF MEDICINE TO  
GIVE THE M.P.H. DEGREE

The Executive Board of the American Public Health Association has approved the accreditation of Vanderbilt University School of Medicine to give the degree of Master of Public Health for the academic year 1946-1947 as

recommended by the Committee on Professional Education on June 14, 1946. This supplements the list of other institutions accredited for this degree as published (*A.J.P.H.*, Mar., 1946, page 244).

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

Lt. Col. Philip R. Beckjord, M.C., Hqs. Office of Military Government, Baden-Wurttemberg, APO 154, New York, N. Y., Chief, Public Health Branch

Erwin P. Brauner, M.D., Orange County Health Dept., Santa Ana, Calif., Asst. Health Officer and Chief, Division of Tuberculosis Control

Charles C. Chapin, M.D., Longcliff, Logansport, Ind., Supt., Logansport State Hospital  
Gerardo Clavero del Campo, Claudio Coello 67, Madrid, Spain, Director, National Institute of Health

Frederick C. Heath, M.D., 10 South Franklin, Christiansburg, Va., Health Officer, Giles-Montgomery-Radford District

David D. Holaday, M.D., 666 Phelan Bldg., 760 Market St., San Francisco, Calif., Asst. Chief, Division of Local Health, State Dept. of Public Health

C. Cameron Kress, M.D., Orange, Va., Health Officer, Orange County Health District

Bernard V. Lally, M.D., Court House, Tiffin, Ohio, Commissioner of Health

Carroll F. Leonard, M.D., M.P.H., 325 East Broadway, East St. Louis, Ill., Director, East Side Health District

Francisco A. Marchan-Carrion, M.D., P. O. Box 52, Quayaquil, Ecuador, S. A. Jefe Provincial de Sanidad, Servicio Sanitario Nacional

Enrique L. Matta, Jr., M.D., P. O. Box 162, Fajardo, Puerto Rico, Chief Medical Officer, Insular Dept. of Public Health

Pauline P. Matusow, M.D., 1235 Grand Concourse, New York, N. Y., Deputy Medical Supt., Harlem Hospital

Russell E. Pleune, M.D., M.P.H., Northern Peninsula Office, Escanaba, Mich., Deputy Commissioner, State Dept. of Health

William J. Porter, M.D., Wayne, W. Va., Wayne County Health Officer

Arthur E. Rikli, M.D., State Health Dept., Helena, Mont., Director, Division of Tuberculosis Control

Claude A. Thomas, M.D., Romney, W. Va., District Health Officer

### *Laboratory Section*

Samuel Belfer, M.A., 746 Jefferson Bldg., Peoria 2, Ill., Director, The Belfer Laboratories

Leona S. Braschi, 44-44th St., Grand Rapids, Mich., Bacteriologist, Evanston Hospital Assn.

Frank D. Eaton, 24 Third Ave., Room 14, New Brunswick, N. J., Technician, Rabbit Serum Production, E. R. Squibb & Sons

John E. Faber, Jr., Ph.D., Univ. of Maryland, College Park, Md., Acting Head, Dept. of Bacteriology

Irving Fox, Ph.D., School of Tropical Medicine, San Juan, Puerto Rico, Asst. Professor of Entomology

F. Perez Gallardo, M.D., Rockefeller Foundation, 66th St. and York Ave., New York 21, N. Y., Official of Health, Public Health Service (Spain)

Salvador L. Momez, M.D., 120 Cavite, Tondo, Manila, Philippines, Asst. Malarialogist, U.S.P.H.S.

Amelia Leroux-Planchart, Norte 9 No. 4, Caracas, Venezuela, S. A., Serological Investigation, The Hygiene Institute

Margaret W. Robinson, 2302 33rd Ave., South, Seattle 44, Wash., Junior Bacteriologist, Seattle Dept. of Public Health

Bertha W. Schimpf; Lederle Laboratories, Inc., Pearl River, N. Y., Dept. Head, Testing Division

Bernice M. Scott, 712 Westlake St., Horseheads, N. Y., Laboratory Worker

Elizabeth H. Thiele, M.S., Sharp & Dohme, Glenolden, Pa., Medical Research

### *Vital Statistics Section*

L. E. Aase, B.A., 425 S. Taylor, Pierre, S. D., Asst. Director of Vital Statistics, State Health Dept.

Margaret Barnett, 3935 S St., S.E., Washington, D. C., Social Science Analyst, Division of Vital Statistics, Bureau of the Census

Lela R. Jones, 1801 Ekin Ave., New Albany, Ind., Clerk-Supervisor, Floyd County Health Dept.

Theodore Pritzker, Ph.B., 111 South Grand W., Springfield, Ill., Statistician, State Dept. of Public Health

### *Engineering Section*

William A. Broadway, Jr., 600 W. Warren St., Shelby, N. C., District Sanitarian, Division of Sanitary Engineering, State Board of Health

Donald K. Harneson, M.S., 2701 DeWitt Ave., Mattoon, Ill., Sanitary Engineer, Division of Sanitary Engineering, State Dept. of Public Health

Paul C. Henderson, M.S., Federal Public Housing Authority, Skinner Bldg., Seattle, Wash., S.A. Sanitary Engineer, U. S. Public Health Service

Lucian M. Hollar, Health Dept., City Hall, Houston, Tex., Supervisor, Rodent & Typhus Control Unit

Henry M. Jones, Harrison County Health Dept., Gulfport, Miss., Public Health Engineer

Fred T. King, P. O. Box 168, Surfside, Calif., Sanitarian, Orange County Health Dept.

John H. Nottage, P. O. Box 128, Nassau, Bahamas, B.W.I., Deputy Sanitary Inspector and Clerical Assistant, Public Health Dept.

William J. Purvis, Woodland Acres, Waldorf, Md., Sanitarian, State Dept. of Health

Paul M. Shadel, 5057 35th St., San Diego 4, Calif., City Food and Market Inspector

Henry C. Steed, Jr., B.S., 825 Custer St., Hapeville, Ga., Sanitarian, Fulton County Health Dept.

Daniel J. Weiner, Hadassah, Jerusalem, Palestine, P.A. Sanitary Engineer, U.S.P.H.S.

Cranston Wilcox, M.S., Branch County Health Dept., Coldwater, Mich., Public Health Engineer

#### *Industrial Hygiene Section*

Earl F. Lutz, M.D., 3044 W. Grand Blvd., Detroit 2, Mich., Assoc. Medical Consultant, General Motors Corp.

E. Lucille Wall, R.N., M.S., 26 E. 14th St., Apt. 603, Indianapolis, Ind., Industrial Nursing Consultant, State Board of Health

#### *Food and Nutrition Section*

Audrey B. Fuller, B.S., 504 Rock Island Bank & Trust Bldg., Rock Island, Ill., Nutrition Director, Dairy Council of the Quad Cities

Alla P. Meredith, B.S., Alachua County Health Dept., Gainesville, Fla., Nutritionist, U. S. Public Health Service

Victor Arancibia, M.D., Casilla 1289, Santiago, Chile, S. A., Chief of Food Control Office, Direccion General de Sanidad

Horace L. Sipple, Ph.D., 307 N. Michigan Ave., Chicago 1, Ill., Director of Research and Education, Evaporated Milk Assn.

#### *Maternal and Child Health Section*

Philip Levine, M.D., Ortho Research Foundation, Raritan, N. J., Director, Biologic Division

Howard E. M. Miller, M.A., 211 W. Wacker Drive, Chicago 6, Ill., Exec. Director, Illinois Commission for Handicapped Children

#### *Public Health Education Section*

Lewis W. Andrews, Local Health Admin., R. 4, Topeka, Kans., Community Health Educator, State Board of Health

Charles O. Bishop, 433 S. Broadway, Tyler, Tex., State Representative, National Foundation for Infantile Paralysis, Inc.

Hugh C. Corrigan, 1137 Seventh St., North, Fargo, N. D., City Health Commissioner

Victor A. Davis, A.B., RFD 1, Box 88, Durham, N. C., Student of Public Health Education, Univ. of North Carolina School of Public Health

Jerome Grossman, A.B., 459½ N. Curson Ave., Los Angeles 36, Calif., Student of Public Health Education, Univ. of California, School of Public Health

Harold J. Halligan, M.D., 254 Montgomery St., Jersey City, N. J., Medical Inspector, Dept. of Communicable Disease, City Board of Health

James W. Harris, Jr., 530 E. Main St., 512 Atlantic Life Bldg., Richmond 19, Va., State Representative, National Foundation for Infantile Paralysis, Inc.

Paul H. Kopper, Ph.D., 710 S. Wolcott Ave., Chicago, Ill., Instructor of Bacteriology and Public Health, Chicago Medical School

Arnold L. Larsen, 220-31 Hanlon Ave., Queens Village, N. Y., State Representative, National Foundation for Infantile Paralysis, Inc.

Joyce C. Limpert, 1400 W. Cedar St., Appleton, Wis., Student, Field Training, Illinois Dept. of Health

Kathleen A. McNevin, M.S.P.H., 3681 Saanich Rd., Victoria, B. C., Canada, Consultant in Public Health Education, Provincial Board of Health

Lillian Olson, P. O. Box 408, Yankton, S. D., State Representative, National Foundation for Infantile Paralysis, Inc.

Willard M. Runyon, M.S., 606 E. Main St., Casey, Ill., State Representative, National Foundation for Infantile Paralysis, Inc.

Ruth Williams, 251 Kearny St., San Francisco 8, Calif., State Representative, National Foundation for Infantile Paralysis, Inc.

Dorothy J. Youtz, A.B., 610 South Canal St., Chicago, Ill., Administrative Analyst, Dist. 3, U. S. Public Health Service

*Public Health Nursing Section*

Mary V. Adams, Duquesne Univ., Pittsburgh, Pa., Acting Director and Assoc. Professor of Public Health Nursing

Sylvia T. Andronik, R.N., 427 Maynard, Ann Arbor, Mich., Student, University of Michigan, School of Public Health

Thelma F. Houwer, R.N., 3963 Coolidge Ave., Oakland, Calif., Supervising Nurse, Oakland Health Dept.

Mary A. Ivanko, B.S., 1404 Harrison Ave., Helena, Mont., S.A. Nurse Officer (R), Asst. Consultant, U. S. Public Health Service

Ardis L. Merrilees, 579 Harris Rd., Apt. 8, Ypsilanti, Mich., Student, School of Public Health, Univ. of Michigan

Lillian G. Ostrand, R.N., 368 Jordan Hall, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Lillian B. Patterson, R.N., M.A., Rt. Box 24, Auburn, Wash., Director of Field Work, Univ. of Washington

Edith M. Ross, R.N., 579 Harris Rd., Ypsilanti, Mich., Student, School of Public Health, Univ. of Michigan

Janet M. Roth, 606 E. Washington, Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

Janice M. Smith, R.N., B.S., Box 701, Hondo, Calif., Supervising Public Health Nurse, Los Angeles County Health Dept.

Martha R. Swindell, Wachovia Bank, c/o I. Swindell, Raleigh, N. C., Student, School of Public Health, Univ. of Michigan

Muriel M. Young, R.N., 1047 Laurel Ave., Kansas City, Kans., Director of Nursing, Kansas City and Wyandotte County Health Dept.

*Epidemiology Section*

Carlos M. Ramirez-Boettner, M.D., Bogueron (Villa-Blanco), Asuncion, Paraguay, S. A., Director, Infectious Disease Hospital, and Division of Epidemiology, Public Health Ministry

Gladys I. Dornbos, 700 E. Fulton, Grand Rapids, Mich., Bacteriologist, Western Michigan Division, State Dept. of Health

Wilbur G. Downs, M.D., M.P.H., 26 Calle Viena, Mexico, D.F., Mexico, Field Staff Member, International Health Division, Rockefeller Foundation

Raymond Fagan, D.V.M., State Board of Health, 1098 W. Michigan St., Indianapolis 7, Ind., Senior Asst. Scientist, U. S. Public Health Service

Ina Gourley, M.D., 419 30th St., Oakland, Calif., Private Practice

G. Charles Granieri, B.A., 219-A Dolores St., San Francisco, Calif., Investigator of Venereal Diseases, State Dept. of Health

Col. Homan E. Leech, M.C., 2100 N. Madison St., Arlington, Va., Assigned to Office of Surgeon General, U. S. Army

Alex J. Steigman, M.D., 3401 N. Broad St., Philadelphia, Pa., Teaching Fellow in Pediatrics, Temple School of Medicine

*School Health Section*

Gwendolyn L. Benjamin, M.P.H., 2724 N. 15th St., Philadelphia 32, Pa., Teacher, Health and Physical Education, Public School System

Grace R. Bryant, B.S., 1565 Franklin Ave., Mineola, N. Y., School Health Education Consultant, Nassau County Tuberculosis and Public Health Assn.

George W. Hawks, B.S., 1233 Norfolk St., Willow Run Village, Mich., Student, School of Public Health, Univ. of Michigan

M. Mary Rohn, M.D., C.P.H., Ypsilanti State Hospital, Ypsilanti, Mich., Physician

Bernice M. Woodbeck, 4635 Sutton Rd., Dryden, Mich., Health Educator, Detroit Board of Education

*Dental Health Section*

Hugh R. McLaren, D.D.S., D.D.P.H., 15 Chatham St., East, Windsor, Ontario, Canada, Dental Health Officer, Windsor Board of Health

*Unaffiliated*

Charles S. Ascher, LL.B., 838 West End Ave., New York 25, N. Y., Member, Committee on Hygiene of Housing, American Public Health Assn.

Armand L. Bird, 901 North 6th St., Boise, Ida., Supervisor, Information Service, State Dept. of Public Health

George H. Brandt, D.V.M., 5700 Cross Country Blvd., Baltimore 9, Md., Veterinary Consultant, UNRRA

Cleta Brinson, B.A., Edwards Hotel, Jackson, Miss., Secy., Administrative Office, State Board of Health

Mary F. Champlin, M.P.H., Federation of Social Agencies, 519 Smithfield St., Pittsburgh 22, Pa., Secy., Health Division

Robert C. Dobson, M.S., 906 Bell Bldg., Montgomery, Ala., State Representative, National Foundation for Infantile Paralysis, Inc.

John R. Hague, M.D., 5330 Colorado Ave., N.W., Washington 11, D. C., Surgeon (R), Bureau of State Services, U. S. Public Health Service

Harold J. Mayers, Box 416, Belle Glade, Fla.,

Hospital Director and Clinic Coördinator,  
Migratory Labor Health Assn.

Francis Morgan, 97 Ghuznee St., Stevenson &  
Howell Ltd., Wellington C., 2, New Zealand,  
Chemist

Herbert A. Perry, M.D., Eastern State Hos-  
pital, Medical Lake, Wash., Superintendent  
Jack Seligman, D.V.M., 2866 Brighton 3 St,  
Brooklyn, N. Y., Veterinarian

Abner D. Silverman, LL.M., 1201 Connecti-  
cut Ave., N.W., Washington, D. C., Deputy  
Asst. Commissioner for Project Manage-  
ment, Federal Public Housing Authority

## DECEASED MEMBERS

Theodore D. Beckwith, Ph.D., Los Angeles,  
Calif., Elected Member 1934, Laboratory  
Section

Letitia E. Lynch, Merced, Calif., Elected  
Member 1932, Public Health Nursing  
Section.

Walter H. Oglesby, Clovis, N. M., Elected  
Member 1945, Laboratory Section

George G. Taylor, M.D., Elkhart, Ill.,  
Elected Member 1943, Health Officers  
Section

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in August Journal)

**Wanted:** Two public health nurses for county health unit in attractive resort area. Population 61,000 with two urban areas of 15,000 and 8,000. Generalized public health nursing service with staff and 7 field nurses. Salary range \$2,100 to \$2,600 annually depending upon experience and education. Own car essential with travel allowance of 5¢ per mile up to \$600 per year. Apply Director Ottawa Co. Health Dept., Grand Haven, Mich.

**Wanted:** Full-time public health nurses. Applicant should state age, year of graduation, school and any training she has had. Apply Fresno Co. Health Dept., Room 203, Courthouse, Fresno, Calif., for further information.

**Wanted:** Medical Director or Associate for national voluntary health agency. Physician with public health experience sought for agency affiliated with National Health Council. Qualifications include administration, planning, speaking and interpretation, ability to gain greater cooperation from medical schools, hospitals, public health agencies; willingness to travel; 35 to 60 years of age. Salary commensurate with past experience and demonstrated abilities. Send photograph and full outline of medical education, experience, family status, salary requirements, to Box I, Employment Service, APHA.

**Wanted:** Public health nurse with special training in health education at a salary of approximately \$3,100; also public health nurse for cancer program at salary of \$3,300. Must have degree; be able to speak in public; must own car—gasoline and oil furnished. Eastern U. S. Apply Box T, A.P.H.A.

**Wanted:** Health Officers for Florida: Younger men preferred. Liberal travel allowances in addition to salary as given below. State has liberal retirement plan. Bay County, Panama City county seat. Fast growing community on St. Andrews Bay and Gulf Coast. Salary \$6,000. Charlotte-DeSoto-Sarasota Counties (one

unit). Main office, Sarasota. Lower Gulf Coast, tourist, citrus, farming and fishing industries. Salary \$6,000. Gadsden-Calhoun-Liberty Counties (one unit). Main office, Quincy. Progressive community, thirty miles from state capital, near Gulf Coast region. Population largely rural. Salary \$6,000. Holmes-Okaloosa-Walton Counties (one unit). Main office, DeFuniak Springs. Region borders on Gulf Coast in western part of State. Population largely engaged in farming, fishing, and timber industries. Salary \$6,000. Leon County, Tallahassee, state capital, county seat. Governmental center in progressive agricultural area. Salary \$6,000. Levy and Citrus Counties (one unit). Main office, Bronson, Gulf coastal region, Central Florida, rural area, farming, fishing, lumber and naval stores leading occupations. Salary \$5,700. For application form, and further information, communicate with Merit System Supervisor, 201 Professional Building, Gainesville, Fla.

**Wanted:** Public health nurses for Columbia and Hamilton Counties of Florida. These two health units are along the banks of the Suwannee River and are interesting places to work. Starting salary \$160 per month with experience, \$170 for those with training, and \$180 for trained nurses. Mileage at 7½ cents per mile. Must own car. Write to Health Officer, Northern Florida Health District, Lake City, Fla.

**Wanted:** Public Health Physician for city service. Can receive training on job. Beginning salary \$4,080 plus \$300 travel. Civil Service protection with retirement provisions. Write Dr. M. D. Ailes, Director of Health, Akron 8, Ohio.

**Wanted:** County Public Health Nurses. Beginning salary \$190 month. Travel and expense allowed. Permanent. Write Miss Aileen Dyer, Director, Public Health Nursing Div., Oregon State Board of Health, 1022 S.W. 11th Ave., Portland 5, Ore.

**Wanted:** Public Health Nurse for generalized public health nursing program in small southern city. Must be trained and qualified to plan work. Starting salary \$1,800 or more depending on qualifications, plus reasonable travel allowance. Write Claude H. Ballard, Commissioner of Health, Florence, S. C.

**Wanted:** Supervisor for Visiting Nurse Association in New Jersey, 40 minutes from New York City. Fourteen staff nurses. Chest agency in National Welfare and Health Retirement Fund. Salary \$3,000. Must have adequate experience in field work, supervision and degree in public health nursing. Box V, Employment Service, A.P.H.A.

**Wanted:** Sanitarian for Department of Health in New England residential suburb, 40,000 population. Preference given applicants with specialized public health training or satisfactory experience in sanitation and public health work. Starting salary \$2,200-\$2,900 per year. Box W, Employment Service, A.P.H.A.

**Wanted:** Public Health Nurse with degree and public health experience for administrative position in newly organized cancer program. Salary \$3,100. Furnish own car, gas and oil furnished. Also public health nurse with degree and public health experience for educational program. Must own car. Salary \$3,100. Box B, Employment Service, A.P.H.A.

**Wanted:** Trained and Experienced Full-time Health Officers for county health departments in California. Salaries range from \$5,400 to \$7,200. California license required for employment. Address inquiries to Dr. Ellis D. Sox, Div. Local Health Service, State Dept. Public Health, 760 Market St., San Francisco, Calif.

**Wanted:** Public Health Nurses for staff positions in generalized public health nursing program located in semi-rural Marin County, near San Francisco. Salaries beginning \$200 and \$235 per month. California R.N., P.H.N. certificates, Health and Development credential required. Apply Dr. Irving D. Johnson, Health Officer, Marin County Health Dept., 704 Fourth St., San Rafael, Calif.

**Wanted:** Public Health Engineer or Sanitary Engineer with public health engineering experience. Must be graduate in civil engineering with specialty in sanitary and municipal engineering from accredited college. Must have 1 year postgraduate course in public health engineering or 1 or 2 years' practical experience in public health department or

U.S.P.H.S. Salary starts \$350 month plus travel expense. Write Dr. I. D. Johnson, Health Officer, Marin County Health Dept., 704 Fourth St., San Rafael, Calif.

**Wanted:** Public health nurses in new county health department in center of Florida's citrus region. Salary dependent upon qualifications and experience. Supervisor of Nurses, \$230 to \$270 per month. Staff Nurses, \$170 to \$200 per month, plus liberal travel allowance. Apply, Director, Polk County Health Department, P. O. Box 819, Bartow, Fla.

**Alaska Territorial Department of Health** wants qualified sanitary engineers in the grades of Director of Division of Sanitation and Engineering and District Sanitary Engineer in Territorial Health Department. Must have bachelor's degree or higher in sanitary or public health engineering from college or university of recognized standing and eligibility for registration as professional engineer in Territory. Director must have 4 years' full-time employment in well organized agency in some phase of sanitary or public health engineering, at least 1 year of which shall have been in administrative capacity; district sanitary engineer must have at least 2 years' full-time employment in well organized agency in some phase of sanitary or public health engineering. Apply Alaska Territorial Dept. of Health, Box 1931, Juneau, Alaska.

**Wanted:** Health Officer in rural area, population 41,000, staff of 10. Beginning salary \$5,000 and travel allowance. Applications should be addressed to Dr. Paul S. Bauer, Alexander-Pulaski Bi-County Board of Health, Halliday Estate Bldg., Cairo, Ill.

**Wanted:** Public Health Educators with Master's degree from recognized school of public health, preferably experienced in community health councils. Positions available on both state and local levels. Write Dr. Arthur L. Ringle, State Director of Health, 1412 Smith Tower, Seattle 4, Wash.

**California State Department of Health** announces examinations for Public Health Medical Officers Grades 1 and 2. Grade 1 Qualifications: Graduation from recognized medical school, completion of approved internship, two years' experience in practice of medicine inclusive of military medical experience, laboratory or research work, or teaching. Salary \$4,860-\$5,820. Appointees eligible for formal public health training. Grade 2 Qualifications: In addition approved internship, three years' public health ex-

perience. Full-time experience in preventive medicine in military service, or one year formal public health training, or two years' postgraduate training in accepted specialty may be substituted for two years' required experience. Salary \$5,460-\$6,660. Write Director, California State Dept. of Public Health, 760 Market Street, San Francisco, Calif., for application form.

**Wanted:** Public health nurses for staff and supervising positions. Salaries from \$1,800-\$2,520 plus travel allowance. Write Division of Public Health Nursing, P. O. Box 210, Jacksonville 1, Fla.

**Wanted:** Young man with Ph.D. major in bacteriology or physiology needed by food concern in southwestern Pennsylvania. One or two years' experience preferred. Write Box L, Employment Service, A.P.H.A.

**Wanted:** Assistant Health Officer. Salary \$5,100. Write Health Officer, Court House, San Bernardino, Calif.

**Wanted:** Two full-time physicians. Immediate appointment. Conduct several small venereal disease clinics. Weekly rotating schedule. Beginning salary \$4,200 plus travel expense. Appointment restricted to graduates United States and Canadian Class A Medical Schools, eligible licensure New Mexico. V.D. experience required. Men under fifty preferred. Write State Health Department, Santa Fe, New Mexico.

**The Cleveland Child Health Association**, a member of the Welfare Federation of Cleveland supported by the Community Fund, is seeking woman qualified to head well established prenatal instruction program. The following qualifications have been established: candidate must be registered nurse with college degree and special training in obstetrics and public health. Previous teaching experience and knowledge of sewing preferred. A rapidly expanding program offers unusual opportunities. Salary \$3,300 per year plus transportation with month's leave each August. Address Mr. Wirth Howell, Acting Director, Cleveland Child Health Association, 1001 Huron Road, Cleveland 15, Ohio.

**Hawaii Board of Health** wants 1 psychiatrist to direct bureau of mental hygiene. Salary \$645 to \$728.33 plus \$45.00 bonus. Certification by the American Board of Psychiatry and Neurology or sufficient training and experience to be eligible for such certification required; 1 Pathologist to direct Bureau of Laboratories. Salary \$645 to \$812 plus \$45 bonus. Must have 3 years' experience in pathology of which 2 years shall in-

clude administrative responsibility for work of recognized laboratory engaged in diagnosis and control of human diseases, graduation from medical school of recognized standing and 2 years' specialized training in pathology; 1 Pediatrician to assist in direction of programs of maternal and child health and of crippled children. Salary \$520 to \$620 plus \$45 bonus. Must be certified by American Board of Pediatrics or have sufficient training and experience to be eligible for such certification. Write to Board of Health, Territory of Hawaii, P. O. Box 3378, Honolulu 1, T. H. Use 15¢ Clipper Mail.

**Wanted:** Physicians trained in school of public health and with public health experience for key positions in Latin-American Republics. For particulars communicate with Personnel Director, Office of Inter-American Affairs, 499 Pennsylvania Ave., N.W., Washington 25, D. C., sending brief outline of qualifications.

**Wanted:** Laboratory Technician in Health Department Laboratory. Make routine bacteriological water analyses and bacteriological and chemical analyses of dairy products. College degree. At least one year in bacteriology, inorganic and organic chemistry. No experience required. Salary \$150 or more depending on qualifications. Write W. Howard Brown, Director, Food and Laboratory Division, Jacksonville Health Dept., 940 Main St., Jacksonville 2, Fla.

**Wanted:** Health education worker for active community program sought by Tuberculosis Association in large western city. Attractive position open in agency closely related to official groups. Write Box H, Employment Service, A.P.H.A.

**Wanted:** Staff nurses general, operating room and central supply room, excellent salary and maintenance, \$10 additional for evening and night duty. Apply: William A. Wyckoff, Administrator, T. J. Samson Community Hosp., Glasgow, Ky.

**Wanted:** Qualified public health nurse with tuberculosis experience needed by progressive voluntary agency with active community program. Write Box C, Employment Service, A.P.H.A.

**Wanted:** Public health nurse for staff position. Salary \$200-\$240, noon dinner allowance. Merit and retirement systems. Program includes generalized field services, interviewing in clinics and group teaching. Minimum requirement certificate of public health nursing. Write Director, Public Health Nursing, Kern County Dept. of Health, P. O. Box 120, Bakersfield, California.



## NEWS FROM THE FIELD

### MAGNA CARTA FOR HEALTH

On July 22, in New York City sixty delegates signed the World Health Organization Constitution. A Magna Carta for Health, it was called by Dr. Thomas Parran, President of the World Health Conference, which met in New York from June 19 to July 23. The Conference personnel included delegates from 51 United Nations members, 13 non-member states, 3 Allied Control Authorities, and 10 international organizations.

The Constitution will go into effect as soon as it has been ratified by the governments of 26 United Nations members. The signatures in New York

of the United Kingdom and Chinese Government were tantamount to ratification. It is expected that both Russia and the United States will ratify the Constitution speedily. The World Health Organization thus appears to be the first of the United Nations specialized agencies to which all members of the "Big Three" would belong. It will be world-wide in character and open to all nations regardless of membership in the United Nations or of their political status. The Conference took the important decision of authorizing the admission of new members on a simple majority vote. Although non-self-governing territories will be



Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, Chairman of the U. S. Delegation and President of the Conference, signing the Charter, while Dr. Martha M. Elliot, Associate Director, Children's Bureau, Department of Labor, and Dr. Frank G. Boudreau, Executive Director, Milbank Memorial Fund, U. S. Delegates, wait their turn to sign  
*Photograph by Leo Rosenthal, Pix Co.*

represented by the governing country, the Conference specifically adopted the principle that their representatives should be qualified persons born in the territories and able to speak for their peoples.

The preamble to the Constitution declares that "The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest coöperation of individuals and states." It further defines health as a "state of complete physical, mental, and social well-being."

As outlined in the Constitution, the World Health Organization will either absorb or direct existing intergovernmental health agencies, for the first time providing nations with a single, authoritative body. It will assume the functions of the League of Nations Health Organization, of L'Office International d'Hygiène Publique, and of the United Nations Relief and Rehabilitation Administration health division. It will integrate as a subordinate branch office the Pan American Sanitary Bureau. These four agencies hitherto have been independent, intergovernmental health bodies.

The World Health Organization will function through an Annual Health Assembly, an Executive Board, and a permanent secretariat headed by a Director General. The recent Conference set up an Interim Health Commission which will function until the World Health Assembly meets. One of its main tasks will be to invoke and prepare for the World Health Assembly as soon as possible. Dr. Fedor Krotkov, Deputy Minister of Public Health of the Union of Socialist Soviet Republics, was elected chairman of the Interim Commission. Upon Dr. Krotkov's return to Russia, Dr. Andrija Stampar, Professor of the University of Zagreb, Yugoslavia, was unanimously elected to succeed him. Dr. G. B. Chisholm, Deputy Minister of Health

of Canada, was elected Executive Secretary, having already served as rapporteur for the Technical Preparatory Commission which prepared for the World Health Conference. Vice-Chairmen are Dr. Szeming Sze, technical expert of the Chinese National Health Administration, Dr. Aly T. Shousha Pasha, Under-Secretary of State in the Egyptian Ministry of Public Health, and Dr. Octavio S. Mondragon, Under-Secretary in the Ministry of Public Health and Assistance of Mexico. The other 13 countries represented on the Interim Commission are: Australia, Brazil, France, India, Liberia, the Netherlands, Norway, Peru, the United Kingdom, the United States, the Ukrainian SSR, Venezuela, and Yugoslavia.

To secure its objective, "the attainment by all people of the highest possible level of health," 22 functions of the Organization are outlined in the Constitution. These functions have to do with coördination of international health work, assisting governments in strengthening health services, establishing epidemiological and statistical services, eradication of epidemic, endemic, and other diseases, accident prevention, promotion of maternal and child health, activities in the field of mental health, especially those affecting the harmony of human relations; medical and public health education, international nomenclature of diseases, standardization of diagnostic procedures, international health conventions, food and drug control, and health information services. The wide range of activities is indicated by one article in the list of functions which reads, "To promote the improvement of nutrition, housing, sanitation, recreation, economic, or working conditions and other aspects of environmental hygiene."

In his closing presidential address to the Conference Dr. Parran declared that "The World Health Organization

will be prepared to use all of our most modern scientific knowledge, our best tools, wherever needed to help heal the wounds of war, to eliminate the ancient human plagues, such as malaria and cholera, tuberculosis and syphilis. Prevention of disease is a first objective. But this is only a first step. Malnutrition stunts the bodies and warps the minds of a large part of the world's population. To attain freedom from want of food is another goal to be reached by pooling our nutritional knowledge with the food and agriculture efforts of the United Nations.

"A next step is the positive improvement of health—of physical and mental fitness. Higher levels of physical development, a longer, more productive, more vigorous life span will be sought and attained.

"To help reach these goals we need not only apply all of the knowledge we have now for prevention, treatment and control of disease everywhere in the world, but to conduct intensive research in the laboratory, at the bedside and in the field to push back the frontiers of the unknown in the health sciences.

"These several, measurable, scientific objectives are difficult, yet should be attainable. But the practical scientists here are not content to stop at this point. We believe that in this world of today, history has given us an additional task.

"All of our humane plans for world health go into the discard unless the peoples of the world can learn to live together in peace. Never again can our world indulge the luxury of another total war. Another such war would be suicide for our civilization.

"In our Magna Carta for health we have ventured to declare that we have a contribution to make to the central world problem of our day, which is to help man learn to live together harmoniously with his fellow men. In making this proposition I for one be-

lieve that our health science must share the burden with religion and education.

"The science of mental hygiene is one of our newer disciplines, concerned with the human mind and emotions. Even in its present early stage of development, it gives promise of helping man adjust better to his environment, live in greater harmony with his fellows. This science of mental hygiene needs to be developed and applied with all speed, since its objective is basic to preventing war and destroying the seeds of war. In short, its objective is peace.

"The World Health Organization is, therefore, our collective instrument to promote physical and mental vigor, to prevent and control disease, to expand scientific health knowledge, and to contribute to the harmony of human relationships. In short, it is a powerful instrument which we have forged for peace."

The Committee on Administration and Finance of the Interim Health Commission on July 24 adopted provisional budget estimates as prepared by the Executive Secretary, Dr. Chisholm. The budget, not to exceed \$300,000 and \$1,000,000 respectively for the rest of 1946 and for 1947, was submitted to Secretary General Tryvge Lie of the United Nations in August. The budget will cover expenses of the Interim Commission and its committees, staff salaries, cost of field surveys, and other items. This same committee made plans for opening a Singapore bureau and for establishing without delay an eastern division of the World Health Organization for the collection and dissemination of information on epidemiological questions.

The Interim Health Commission is scheduled to hold a meeting in Geneva, Switzerland, in October and November, 1946.

(For earlier discussions of the World Health Organization see the *Journal*

for April, p. 426; May, p. 576; July, p. 825; and August, p. 949. The Constitution will be carried in a later issue.)

#### COMMONWEALTH FUND LATIN-AMERICAN FELLOWSHIPS

The Commonwealth Fund has announced that five Latin-American physicians have been appointed to Fellow-

coming academic year. These men, who have been selected with the help of the Pan American Sanitary Bureau, will be the last group to come to this country under the plan initiated by the Fund in 1942.

The Fellows appointed are Enrique Jose Modesto Escarra, M.D., Argentina; Jose Pimento de Mello, M.D., Brazil; Pablo Mori-Chavez, Peru; Guillermo Terzano, M.D., Argentina; Raul M. E. Carrea, M.D., Argentina.

#### DR. R. D. DEFRIES RECEIVES C.B.E.

Among the honors awarded in the Canadian Civil List by King George VI as released on Dominion Day in Canada, July 1, was that of Commander of the British Empire to Robert D. Defries, M.D., D.P.H., Director of the School of Hygiene of the University of Toronto. Dr. Defries is Honorary Secretary of the Canadian Public Health Association and a member of the Committee on Professional Education of the American Public Health Association.

#### COLONEL MACKLER RECEIVES THE CROIX DE GUERRE

The award of the Croix de Guerre with Silver star was recently made to Colonel Max J. Mackler, Sn.C., Tampa, Fla., in the name of General Charles de Gaulle of France. Colonel Mackler has served in England, Ireland, France, Germany, and Switzerland for two years, principally as executive officer of the 16th General Hospital and medical inspector for the 819th Hospital Center,

of which he was later commanding officer. Previous to the war he was former director of housing and member of the Department of Public Health at Tampa, Fla. His recognition relates to work with the civilian population of France in reconstrucing water supplies, sewage disposal systems, housing, and the suppression of epidemics.

The National Mental Health Act was passed by both houses of Congress and signed by the President in July. The purpose of the Act is to improve the mental health of the people through:

1. Conducting researches, investigations, experiments and demonstrations relating to the cause, diagnosis, and treatment of psychiatric disorders.

2. Assisting and fostering such research activities by both public and private agencies, as well as

- a. to promote the coördination of all such researches and activities, and

- b. to promote the useful application of their results.

3. Training personnel in matters relating to mental health.

It applies to the mental health problem the same general pattern of federal-state coöperation that characterizes the Social Security Act for general public health work and that for venereal disease control and tuberculosis control.

The Act authorizes an appropriation of \$7,500,000 for the erection and equipment of hospital and laboratory buildings and facilities to be known as the National Institute of Mental Health. This is to be used by the Public Health Service as the focal point for research, experimentation, and advanced or specialized training, and as a clearing house for the collection and dissemination of information concerning advances in the prevention, diagnosis, and treatment of psychiatric disorders. It is contemplated that physically the Institute will consist of clinical facilities to accommodate about 200 patients needed for clinical research, as well as special

laboratories for basic laboratory studies. For purposes of study, the bill authorizes the Surgeon General to admit and treat at the new Institute voluntary patients, whether or not they are otherwise eligible for treatment by the Service. It also authorizes the transfer to the new Institute, for purposes of study, of patients from St. Elizabeths Hospital, a federal mental hospital.

Further provided by the Act is an additional appropriation of \$10,000,000 a year to the U. S. Public Health Service for grants for the establishment and maintenance of public health services to take care of the proposed expansion of mental health work. The same provision increases by \$1,000,000 the amount that the service may expend in providing demonstrations and personnel to assist the states and for the training of personnel for state and local health units.

A National Advisory Mental Health Council is created to give advice and assistance to the Surgeon General who is responsible for the administration of the program on the federal level. The Council is composed of the Surgeon General ex-officio and six members selected by him from leading medical or scientific authorities who are outstanding in the study, diagnosis, or treatment of psychiatric disorders. The Advisory Council also reviews, approves, and certifies to the Surgeon General applications for research grants to universities, hospitals, laboratories, and other public and private institutions, and training grants to public and private schools and institutions. It also is empowered to fix the number of fellowships granted for research at the National Institute and elsewhere for advanced or specialized training in the field of mental health.

The Act defines psychiatric disorders as including "diseases of the nervous system which affect mental health." Mental health in turn is defined as a

condition of health free from psychiatric disorders.

In commenting on the enactment of the bill Dr. George S. Stevenson, Medical Director of the National Committee for Mental Hygiene, said, "This epochal new law makes possible for the first time a national attack on mental illness. We have long known that vastly greater effort and more personnel and funds are necessary to provide better care for patients in mental institutions and, even more important, to prevent early mental and nervous disorders from developing into serious conditions requiring protracted institutional treatment.

"There are 600,000 patients in mental hospitals, at least 1,000,000 more sick enough to require hospital treatment and there are an additional 8,000,000 people who should be receiving psychiatric guidance and treatment.

"For the first time states will be able to establish clinics open to all who need services. The task before each state now is to formulate the widest possible program for the development of its mental hygiene services, with federal assistance. Our universities, hospitals, clinics and research laboratories have before them unprecedented opportunities to throw further light on the cause, treatment, and prevention of mental illness.

"For every dollar spent to advance knowledge of the cause, diagnosis and cure of mental diseases, the American people have heretofore spent \$100 to care for the known mentally ill. The new law should signalize the beginning of the end of such a lopsided and expensive handling of the mental health problem."

#### INSTITUTE FOR COÖPERATIVE RESEARCH

Johns Hopkins University, Baltimore, has established an Institute for Co-operative Research to work with government and industry, according to the

*New York Times*, June 19. In a statement to the press, Isaiah Bowman, LL.D., president of the university, said that so many scientific investigations had been made at the university during the war on a contract basis for various government agencies in the interest of national health, welfare, and safety, that the university had now decided to recognize such research as a regular function. The science departments in the school of higher studies will participate in the activities of the new institute together with the applied physics laboratory at Silver Spring. In addition the School of Medicine, the School of Hygiene and Public Health, and the School of Engineering will cooperate.

#### FEDERAL SECURITY AGENCY REORGANIZATION COMPLETED

The July *Journal* (p. 827) summarized briefly the President's reorganization plan for the Federal Security Agency. This has now gone into effect in the absence of disapproval by the two houses of Congress, and its significance and practical effects have been summarized by Federal Security Administrator Watson B. Miller.

Public health will be one of four coordinate operating branches of the Security Agency, the other three being Social Security Administration, Education, and the Office of Special Services.

The Public Health Division will consist of the U. S. Public Health Service, with Dr. Thomas Parran continuing in his capacity as Surgeon General of the Service. Freedmen's and St. Elizabeths Hospitals will be under his direction. Transferred to the Service from the Commerce Department is the Division of Vital Statistics, with Dr. Halbert Dunn remaining as head of the Division. The Food and Drug Administration is in the Office of Special Services.

The Children's Bureau (with the exception of its child labor functions) is transferred to the Social Security Ad-

ministration Division. Katherine Lenroot, its Chief since 1934, will remain in that capacity. Commenting on this transfer, Administrator Miller said, "For administrative purposes, the Children's Bureau, with its programs for maternal and child health, child welfare, and crippled children's services, has been placed in the Social Security Administration. But its relationships with both health and education are fully recognized, and effective coordination in this field will be one of our major objectives."

In addition to the 4 operating divisions of the Federal Security Agency there will be 6 staff offices: Executive Assistant, General Counsel, Research, Information, Federal-State Relations, and Inter-Agency and International Relations. The Federal-State Relations Office will look toward the coordination of grant-in-aid administration and the establishment of uniform standards and procedures. It is the hope that state agencies administering several grant programs may submit a single state plan and be subject to unified fiscal, personnel, and other policies.

No action has yet been taken by Congress on the President's recommendation included in his reorganization plan that the Federal Security Agency be given "departmental status and a permanent place in the President's Cabinet."

#### AMA'S DISTINGUISHED SERVICE MEDAL TO DR. CARLSON

Dr. Anton Julius Carlson, Distinguished Service Professor Emeritus of the University of Chicago, received the citation and Distinguished Service Medal of the American Medical Association at its recent meeting in San Francisco. Currently Dr. Carlson is chairman of the Executive Committee of the American Association for the Advancement of Science, of which he is also a past president, and chairman of

the National Society for Medical Research (see p. 1061). He has also been president of the American Physiological Society, the Society for Experimental Biology and Medicine, and the American Biological Society. He is the author of *Health in Hunger and Disease* and *The Machinery of the Body*, in addition to many periodical contributions.

#### HOSPITAL CONSTRUCTION BILL BECOMES LAW

The President has signed S. 191, more familiarly known as the Hospital Construction Bill, passed by both houses of Congress. As already discussed in the *Journal* (pp. 372, 380, 987, 1945; and 669, 1946), this bill amends the Public Health Service Act to authorize grants to the states for surveying their existing hospital and health center facilities and to assist in the construction or modernization of needed facilities.

The bill projects a \$1,125,000,000 five year hospital construction program and authorizes the federal government to pay up to one-third of the cost of building or equipping new facilities. The remaining two-thirds must be contributed locally. Voluntary non-profit hospitals may share in the program as well as public—state, county, or city—institutions. The bill carries an appropriation of \$375,000,000 for construction and an additional \$5,000,000 for surveys, drafting of plans, and allocating of priorities.

The bill sets a new pattern for the distribution of federal funds. Heretofore most state-federal coöperative programs have required dollar for dollar matching. In the hospital construction program, states will share on a basis of need. The ratio per capita income of the state to the national average per capita income, value of products, and population are among the factors that will determine need.

In testifying before the Senate Subcommittee on Education and Labor in behalf of the bill, Surgeon General Thomas Parran of the U. S. Public Health Service outlined the projected program. This consists of an integrated system of hospitals and health centers that would serve every section of the nation. The system would be made up of base hospitals and their tributary district and rural hospitals and health centers. Under the plan it will not be necessary for all areas to have the expensive facilities of the base hospital because provision will be made for referral to the base hospital of cases or problems needing these services.

Since the bill was under discussion in two successive sessions of Congress, the states have had an opportunity to prepare for the operation of the Act. A majority of the states have already passed appropriate legislation authorizing a hospital survey and designating the state agency through which the federal grants-in-aid will be administered. Surveys of hospital and health center facilities are under way in nearly every state.

#### NEW YORK STATE HEALTH OFFICERS ASSOCIATION

The New York State Health Officers Association at its business meeting, June 26, elected the following officers for the coming year:

*President*—George E. Sanders, M.D., Rochester

*First Vice-President*—Burdge P. MacLean, M.D., Huntington

*Second Vice-President*—Robert H. Broad, M.D., Utica

*Third Vice-President*—Charles D. Shields, M.D., Buffalo

*Secretary*—Eldred Stevens, M.D., Hammondsport

*Treasurer*—H. Burton Doust, M.D., Syracuse

Dr. R. H. Wilcox, having served as Association Secretary for the past ten years, declined nomination for another term. Dr. Doust was reelected to the office of Treasurer.

DR. GAYLORD W. ANDERSON NAMED  
TO MAYO CHAIR

Dr. Gaylord W. Anderson, on June 24, was designated by the University of Minnesota regents as first holder of the Mayo Professorship of Public Health, first permanently-endowed professorship at the University. Selection of Dr. Anderson topped a list of 9 major appointments and promotions approved by the regents.

Professor and Head of the School of Preventive Medicine and Public Health at the university, Dr. Anderson has been on the staff since 1937. He was on leave for 3½ years, from July, 1942, to March of this year, serving in the office of the Army's Surgeon General in Washington. He was graduated from Dartmouth in 1922, received his M.D. and Dr.P.H. degrees at Harvard and studied in Europe.

The Mayo chair was endowed last January by the Mayo Properties Association.

RIO DE JANEIRO AND ENVIRONMENTAL  
HEALTH

Well over 200 sanitary and public works, engineers, engineering educators, health officers, manufacturers, and other interested persons met at Rio de Janeiro from June 10-14, 1946, at the First Inter-American Regional Conference of Sanitary Engineering. The purpose of the Conference was to discuss sanitation problems of the Americas and to make the first move in establishing a permanent international organization of sanitary engineering in this hemisphere. The Institute of Inter-American Affairs and the Pan American Sanitary Bureau, in collaboration with the National Health Department of Brazil, were the sponsors. The Water and Sewage Works Manufacturers Association provided financial aid, speakers, and exhibits. The following objectives for the permanent association were agreed upon by the Organization Committee:

1. Development of sanitary engineering
2. An interchange of ideas and scientific information concerning developments of sanitary engineering in the Americas
3. Establishment of standards of sanitation for the Americas
4. Promotion of more rapid advancement in the sanitation of the several countries of America as a necessary basis for economic development
5. Establishment of good will and better understanding between the engineers of the Americas

Among the recommendations of the Sanitary Engineering Education Committee were:

1. Inclusion of sanitary engineering courses covering water supply and sewage disposal in the civil engineering curricula of all engineering schools in the American nations
2. The creation of a school of public health in each nation with additional schools on the basis of one for each twenty million population
3. That all applicants for governmental positions concerned with public health be required to present a certificate of graduation from a special course in hygiene and public health

A special regional conference to include nations of northern South America and Central America will be held at Caracas in September. Present plans are to follow this by a conference of representatives from all 21 member nations early next year.

PERSONALS

Central States

ALBERT E. BAIR, M.D., of Independence, Kan., has been appointed Health Director of the Montgomery County Health Department, effective April 1, succeeding HAROLD O. BULLOCK, M.D., who in the last 8 months has served as a temporary part-time Health Officer.

CHARLES H. BENNING, M.D., M.P.H.,\* has accepted the position of Director of Public Health at Oak Ridge, Tenn., as of July 22. Dr. Benning was recently Chief Medical Officer



with the Veterans Administration, Flint, Mich. Prior to that, he was with the U. S. Public Health Service, from 1941 to 1945.

GEORGE F. CAMPANA, M.D., M.P.H.,\* who has been State Health Officer in Bismarck, N. D., since 1944, resigned on July 20 to return to his home in Brooklyn, N. Y. WILLIAM M. SMITH, M.D., M.P.H.,\* who has been Director of the Division of Communicable Diseases, was appointed Acting Health Officer.

ICIE MACY HOOBLER, Ph.D.,\* Director of the Research Laboratory of the Children's Fund of Michigan in Detroit, has been awarded the Francis P. Garvan Medal of the American Chemical Society for her studies on nutrition and the chemical processes of human growth.

C. F. LEONARD, M.D., M.P.H., has been appointed Public Health Officer of the East Side Health District in East St. Louis, Ill., by action of the Board of Health. His term of office began July 1.

#### CHANGES IN HEALTH PERSONNEL IN MICHIGAN:

LARS W. SWITZER, M.D.,† for 2 years plant physician for General Motors Corporation, Bay City, has been named Head of the Manistee-Benzie Health Unit, with headquarters in Manistee, a position he once before held.

CLARENCE D. BARRETT, M.D.,\* of Mason, on service with the Army of the United States, has been appointed Health Officer of Ottawa County.

CHARLES F. ATKINSON, M.D.,† of Traverse City, has resigned as Director of the Grand Traverse-Leelanau County Health Department because of ill health.

JAYNE SHOVER,† Acting Director of Field Services for the National Society for Crippled Children and

Adults, has been appointed Director of the new Cerebral Palsy Division of the National Society, with headquarters in Chicago. Before joining the Society in 1945, Miss Shover was Supervising Psychologist and Special Education Director of the Illinois Division of Service for Crippled Children and Consultant to the Illinois Commission for Handicapped Children.

PAUL R. SLATER, M.D., of Burlington, Ia., on May 1 became Director of the Serum-Plasma Center and Associate Director of the Division of Preventable Diseases of the Iowa State Department of Health. Dr. Slater, who has recently been separated from service with the rank of Lieutenant Colonel, in 1941 served as Medical Director of the Interstate Malarial Survey for Illinois, Minnesota, Wisconsin, Missouri, and Iowa.

#### Eastern States

NUNZIO J. CARROZZO, M.D., of Staten Island, N. Y., has been assigned from the U. S. Public Health Service as Acting Medical Director for the Iowa State Division of Industrial Hygiene.

ANNA FILLMORE, M.P.H.,\* a member of the staff of the Visiting Nurse Service of New York since 1940, has been appointed Assistant Director of the organization, succeeding MISS ELIZABETH C. PHILLIPS,\* who has resigned to become Director of the Program of study in Public Health Nursing at New York University.

FRANZ GOLDMANN, M.D.,† has been appointed Clinical Professor of Public Health at the Yale School of Medicine, New Haven, Conn., it was announced on July 18.

MABEL DUNCAN KIRKPATRICK has been appointed Assistant Director of Psychiatric Social Work for the New York State Department of Mental Hygiene. She has been

Supervisor of Social Work at the Rome State School since 1944. From 1930 to 1944, Mrs. Kirkpatrick was a member of the social service staff of the Utica State Hospital.

PAUL A. LEMBCKE, M.D., M.P.H.,† is now Associate Director of the Rochester, N. Y., Council of Regional Hospitals, which is operating under a grant from the Commonwealth Fund, New York City.

#### CHANGES IN NEW YORK STATE HEALTH DEPARTMENT PERSONNEL:

EDWARD B. BUKOWSKI, M.D.,† formerly Chief of the Emergency Maternity and Infant Care Bureau and more recently District Health Officer in the Rochester District, resigned from the department to accept the position of Deputy Health Commissioner in the Department of Health in the City of Buffalo.

JOSEPH P. GAREN, M.D.,\* District State Health Officer in the Saranac Lake District for the past 9 years, has been assigned to a similar position in the Rochester District.

JOHN M. CHAPMAN, M.D.,† Assistant District Health Officer in the Buffalo District, has been transferred to the Saranac Lake District as District State Health Officer to succeed Dr. Garen.

MARY BUTLER KIRKBRIDE, Sc.D.,\* retired on June 30 as Associate Director of the Division of Laboratories and Research, after 32 years of service in the department.

JAMES H. LADE, M.D.,\* Assistant Director of the Division of Syphilis Control, has been granted a military leave of absence to accept the position of Senior Surgeon with the U. S. Public Health Service to aid in the UNRRA program in Poland.

ROBERT L. VUGHT, M.D.,† District Health Officer in the Rochester

District, resigned his position with the department to accept a position in Ecuador with the Institute of Inter-American Affairs.

DWIGHT O'HARA, M.D.,† Boston, has been appointed Dean of Tufts College Medical School. He has served since 1931 at Tufts as Professor of Preventive Medicine.

MRS. BEL M. OXHOLM has been appointed Commander of the Field Army of the New York City Cancer Committee, succeeding Mrs. FRANCIS J. RIGNEY who resigned on April 5 and who had served as Commander since 1939. Mrs. Oxholm is a graduate of the Glasgow Western Infirmary, a member of the College of Nursing, and served with Queen Alexandra's Imperial Military Nursing Service from 1914 to 1919. She has been Chief of the Obstetrical Department of the Nursing School of Emory University, Georgia, and also served at the Gouverneur Hospital in New York City.

JOHN T. SHEA, M.D., of Foxboro, Mass., Secretary-Treasurer of the Massachusetts Psychiatric Society, has been appointed Director of Mental Deficiency and Statistics in the Massachusetts State Department of Mental Health.

BARRY C. SMITH,† General Director of the Commonwealth Fund, New York City, has recently been conferred the degree of Doctor of Laws (*honoris causa*) by the University of Glasgow, recognizing "the sustained generosity of academic America to academic Britain."

MYRON E. WEGMAN, M.D.,\* has resigned as Assistant Professor of Clinical Pediatrics at Cornell University Medical College and as Director of Training and Research with the Bureau of Child Hygiene, New York

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

City Department of Health. He has been appointed Professor of Pediatrics and Head of the Department in the Louisiana State University School of Medicine, New Orleans.

### Southern States

J. B. BLACK, M.D., DR.P.H.,\* who has served for 19 years as Health Officer of Rutherford County, Tenn., has resigned to enter private practice in Murfreesboro.

JOHN A. COWAN, M.D.,\* recently released from the U. S. Public Health Service, for which he had been serving as Director of the Venereal Disease Control Division and Acting Director of the Division of Local Health Service, Oklahoma State Department of Health, has been appointed Director of the Bureau of Venereal Disease Control of the Michigan State Department of Health, Lansing, effective June 1.

LEON A. DICKERSON, M.D., of Oak Hill, West Va., has been appointed Director of the Boone County Health Department, effective April 1, succeeding ROBERT L. HUNTER, M.D., of Madison, who has resigned.

### CHANGES IN HEALTH PERSONNEL IN FLORIDA:

WILLIAM G. C. HILL, M.D., formerly with the West Virginia State Health Department, has been appointed Director of the Health Unit composed of Suwannee-Dixie and Lafayette Counties with headquarters at Live Oak. This is a new unit and began operation on July 1, 1946.

FRANKLIN H. REEDER, M.D., M. P.H., recently released from the U. S. Army Medical Corps, has been appointed Director of the Southwestern Florida Health District, composed of Manatee, Hardee, DeSoto, Charlotte, Sarasota, Lee, Hendry, and Collier

Counties, with headquarters at Arcadia, Fla.

ALBERT V. HARDY, M.D.,† who has been serving with the Office of Scientific Research and Development and the National Institute of Health, Washington, D. C., has been appointed Director of the Bureau of Laboratories of the Florida State Board of Health. He once served as Epidemiologist with the Iowa State Department of Health, as Associate Professor of Preventive Medicine at the State University of Iowa College of Medicine, Iowa City, and as Associate Professor of Epidemiology, Columbia University College of Physicians and Surgeons, New York.

LT. COL. EDWARD S. HOPKINS, SN.C.,† has been awarded the Army Commendation Ribbon "for outstanding and meritorious service as Sanitary Engineer, Headquarters Third Service Command from January, 1944, to December, 1945." He has returned to his former position as Filtration Engineer, Bureau of Water Supply, Baltimore, Md.

### CHANGES IN HEALTH PERSONNEL IN KENTUCKY:

BENJAMIN F. REYNOLDS, M.D., of Carlisle, has been appointed Health Officer of Nicholas County.

HARLAND V. USHER, M.D., of Sedalia, has been named Health Officer of Graves County, succeeding GEORGE M. JEWELL, M.D.,† who has entered private practice in Kokomo, Ind.

RUSSELL E. TEAGUE, M.D., of Louisville, has resigned as Director of Tuberculosis Control for the Kentucky State Department of Health to carry on similar activities for the U. S. Public Health Service.

FREDERICK D. MOTT, M.D.,\* has resigned as Chief Medical Officer of the Farm Security Administration after serving in the program since Janu-

ary, 1937. He has been appointed Chairman of the Health Services Planning Commission of the Province of Saskatchewan, Canada, for 3 years. MARK V. ZIEGLER, M.D.,† will succeed him at the F.S.A.

RICHARD J. PLUNKETT, M.D.,† has been appointed Director of the Division of Health and Sanitation, Institute of Inter-American Affairs, to succeed COL. JOHN D. YEAGLEY, who resigned, effective April 4. Dr. Plunkett has been a member of the Institute staff since it was created in 1942, serving as Chief of Field Party in Paraguay, where he organized and directed the Inter-American Coöperative Public Health Program. Dr. Yeagley plans to join the staff of Bowman Gray School of Medicine of Wake Forest College, Winston-Salem.

BRUCE H. POLLOCK, M.D.,\* resigned on July 19 as Deputy State Health Commissioner, West Virginia, to become Chief of the Outpatient Department of the U. S. Veterans Administration in Huntington, W. Va.

#### CHANGES IN HEALTH PERSONNEL IN TEXAS:

EARL H. SMITH, M.D., Texarkana, has resigned as Director of the Texarkana-Bowie County Health Unit to go to Tarzana, Calif.

DUAN E. PACKARD, M.D., of Kerrville, has been appointed Health Officer of Kerr County to succeed the late JOHN D. JACKSON, M.D.

DAVID L. ROBERTSON, M.D., Wichita Falls, has been named Director of the Wichita Falls Health Unit and will take up his new duties immediately on discharge from service.

JOHN G. DANIELS, JR., M.D., of Gilmer, is the new full-time Director of the Upshur County Health Unit.

WALDO L. TREUTING, M.D., M.P.H.,† has been appointed President of

the Louisiana State Board of Health and State Health Officer by the Governor, effective July 23. He succeeds DAVID E. BROWN, M.D.,† who has been the State Health Officer since 1942. Dr. Treuting has been Chief of the Division of Preventive Medicine for the past 3 years and has also served as Parish Health Officer of several of the Louisiana Parishes and as Epidemiologist of the State Health Department.

#### CHANGES IN HEALTH PERSONNEL IN VIRGINIA:

VERNON A. TURNER, M.D.,† formerly Health Officer of Augusta County and recently released from army service, has been appointed Assistant Director of Local Health Services, with headquarters in the Southwest District Office in Abingdon, effective May 1, succeeding PEYTON M. CHICHESTER, M.D., of Richmond, who has been transferred to the central office in Richmond.

CAMERON F. MACRAE, JR., M.D.,† recently released from army service, has been named Health Officer of the Russell-Wise Health District to succeed LINWOOD FARLEY, M.D.,† of Morton, who has been transferred to the Prince William-Stafford Health District with headquarters at Manassas, effective May 1.

#### Western States

WILLIAM F. COGSWELL, M.D.,\* of Helena, Mont., for 33 years Executive Secretary of the Montana State Board of Health, has become an honorary life member of the U. S. Public Health Service. The honor was conferred at a recent banquet in Washington, D. C. Since his resig-

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

nation from the State Board, he has been preparing a history of Rocky Mountain spotted fever.

WILLIAM F. HAMILTON, M.D., of Havre, Mont., has been appointed Health Officer of Hill County.

### Foreign

ERNESTO DE SOUZA CAMPOS, M.D., formerly Professor of Bacteriology, São Paulo School of Medicine, Brazil, has been appointed Minister of Education and Health of Brazil. The new minister informed EUGENE P. CAMPBELL, M.D.,\* Chief of the Institute of Inter-American Affairs field party in Brazil, that no changes are planned in regard to the administration of Servicio Especial de Saude Publica, the cooperative public health program in Brazil, now almost 4 years old.

### Deaths

CHARLES LEE HOAGLAND, M.D., the youngest of the 15 full members of the Rockefeller Institute, died of a heart ailment on August 2 at the age of 39. He was a leader in studying progressive muscular dystrophy and developed a clinic at the Rockefeller Institute Hospital on cirrhosis of the liver. Most of the present methods of treating cirrhosis and infectious jaundice are based on his findings.

EDWARD GODFREY HUBER, M.D., DR.P.H.,\* Professor of Public Health Practice and Associate Dean of the Harvard School of Public Health, died suddenly on July 22 at the age of 64. He had been Acting Dean of the School since 1942, during which time he aided in securing funds from the Rockefeller Foundation to insure further development of the school, created the Harvard Public Health Alumni Bulletin and introduced instruction and research in the newer branches of public health.

MORRIS C. SCHWARTZ, PH.D., Assistant Director of the Engineering Experiment Station, Louisiana State University, Baton Rouge, La., died on May 26. Dr. Schwartz has served as a member of the Joint Editorial Committee of American Water Works Association and the A.P.H.A. for *Standard Methods for the Examination of Water and Sewage*.

### CONFERENCES AND DATES

American Dietetic Association—28th Annual Meeting. Netherlands Plaza, Cincinnati, O. October 14-18.

American Hospital Association—48th Annual Convention and Post-war Conference. Philadelphia, Pa. Week of September 30.

American Medical Association—7th Annual Congress on Industrial Health. Copley-Plaza Hotel, Boston, Mass. September 30-October 3.

American Nurses Association, National Organization for Public Health Nursing, National League of Nursing Education—Biennial Nursing Convention. Atlantic City, N. J. September 23-26.

American Public Health Association—74th Annual Meeting. Headquarters—Public Auditorium, Cleveland, O. November 12-14.

Meetings of related organizations, November 11:

American School Health Association  
American Social Hygiene Association  
Association of Maternal and Child Health Directors

Association of Reserve Officers of the U. S. Public Health Service

Conference of Municipal Public Health Engineers

Conference of Professors of Preventive Medicine

Conference of State Sanitary Engineers

Conference of State and Provincial Public Health Laboratory Directors

Council of State Directors of Public Health Nursing

National Committee of Health Council Executives

Public Health Cancer Association

American Public Works Association—Public Works Congress. Fort Worth, Tex. September 22-25.

American Water Works Association—Southeastern Section—DeSoto Hotel, Savannah, Ga. September 9-11.

# American Journal of Public Health

## and THE NATION'S HEALTH

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## The Trend of Tuberculosis Association Programs\*

LOUIS I. DUBLIN, PH.D. F.A.P.H.A.

*Second Vice-President and Statistician, Metropolitan Life Insurance Company,  
New York, N. Y.*

IT was almost twenty-three years ago, on the occasion of the annual meeting of the National Tuberculosis Association in Santa Barbara in 1923, that I last addressed a group of tuberculosis workers in this part of the country. My subject then was "The Causes of the Recent Decline in Tuberculosis and the Outlook for the Future." There may be in today's audience a number who were present on that occasion; but I can identify only a few. I may, with propriety, therefore, recall that in that paper I took stock of the situation in the field of tuberculosis and considered the facts on the incidence and mortality of the disease in relation to sex, age, race, occupation, and other factors. I discussed the efficacy of the various therapeutic procedures of the period and, more particularly, the effectiveness of our sanatoria.

At the end of my talk, I was bold enough to project an outlook for the future. I was disposed to be optimistic, for, in the period just after the great

influenza epidemic, there had been a precipitous decline in the death rate from tuberculosis. I judged that the favorable trend would continue and that, altogether, we could look forward to the time when the disease would be reduced to a problem of minor dimensions in most parts of the country, even within the lifetime of those I was addressing. It is a pleasure to stand before you today and to say that my optimism has been broadly justified. The trend in the intervening period has been very much in the direction which I then predicted.

Certainly we have made enormous strides in these 23 years. Back in 1923 the death rate from tuberculosis in the country as a whole was about 95 per 100,000. In over a third of the states the rate was over 100. Today the country's death rate is below 40. Only one state, Arizona, has a rate over 70, and only 4 other states and the District of Columbia have rates of 50 or over. In 11 states the rate is below 30, and in six, below 20. Today, tuberculosis is eighth in rank among the causes of death. The death rate for white females

\* Address delivered at the annual meeting of the California Tuberculosis and Health Association, San Francisco, Calif., April 23, 1946.

is a shade under 25 per 100,000, which is about 30 per cent less than from diabetes. In short, these 20 odd years have seen an increasingly effective national movement which has cut the tuberculosis death rate close to 60 per cent in the nation as a whole.

These facts make it easy to understand why you have asked me to discuss the "Trend of Tuberculosis Association Programs" and to consider among other things the future of the use of the Christmas Seal Funds. These matters are now mooted the country over. I firmly believe that we have arrived at a point in the campaign when we should take stock anew and, in the light of current facts, so shape our activities as to make the most effective use of our personnel and funds in the final attack on tuberculosis. I am delighted to have this opportunity to exchange thoughts with you on this problem and especially here where so much that is constructive and vital is going on. For, in California, you have had a strong and progressive organization—well led over many years, ready to experiment in new ways and, what is most important, you have been ready to take a broad view of the part which the tuberculosis campaign plays in the public health program as a whole. You have handled your difficult wartime tuberculosis problems with great vigor, and, considering all the wartime limitations on equipment and personnel, with great success. It has been an inspiring performance.

Our tuberculosis campaign has all along made adjustments to changing conditions. Because of the gains made, the scope and type of activities of many tuberculosis associations today are very different from what they were 25 years ago. For one thing, the voluntary agencies have succeeded far beyond their expectations in stimulating the organization of effective official services in the campaign against the disease. In

the early 1920's there were relatively few states which had agencies specifically devoted to tuberculosis control. Today, every state in the Union has an agency of this kind, usually as a distinct division of the state health department, and similar agencies are found in some of our largest cities. In the 1920's there was little or no direct federal participation in the general field of tuberculosis control. Today, a strong division is being built up in the U. S. Public Health Service, staffed by competent workers and supplied with large funds to supplement the operations of the states. In a word, the official services have been widely and intensively developed and they are now carrying on some of the functions formerly carried by the voluntary agencies. It has accordingly become necessary for more and more of the voluntary societies to revamp their programs by dropping some activities and taking on new ones, or by concentrating their efforts on some special phase of the problem.

At the same time the tuberculosis societies, as a part of the whole voluntary health movement, have grown enormously in their capacity to serve. There are today 2,800 local societies, or nearly twice as many as there were in 1923, and they are more adequately supported by the public. In 1923, Christmas Seal Sales totalled \$4,255,000. In the 1945 Christmas season they exceeded \$15,000,000. The American people have responded exceedingly well to the continued appeal of our movement and have made increasingly large contributions to it.

It is, therefore, opportune to consider with you the trends in the programs currently operating. It is clear that these programs must vary considerably from place to place to correspond to differences in local conditions. I have already indicated the marked differences in the states where the death rates vary all the way from over 100

per 100,000 in Arizona to as low as 12 in Utah. In our larger cities much the same range is found. I wish it were possible to review with you what the actual programs of tuberculosis associations are in the various parts of the country and to discover what correlation there is between the type of program of each society and the level of the death rate in its area. I regret that this information is not uniformly available. For the purpose of our discussion, however, I can illustrate by considering the situation in two cities for which we have the information and which are very different in their local tuberculosis picture. I have in mind San Antonio, Tex., and Syracuse, N. Y.

In San Antonio the death rate is still over 100 per 100,000. Obviously, there still is very much the same basic job to do there as there was the country over in 1923, namely, to bring home to the people the elementary facts with regard to the disease, to stimulate the development of the necessary clinical and sanatorium facilities for diagnosis, follow-up of contacts, and treatment of active cases. Last year San Antonio raised \$31,000, or 8.6 cents per capita. This money is spent for the usual types of tuberculosis service but, unfortunately, it does not appear to be effectively directed. Much more could be accomplished if more money and skill were available. If I were a citizen of this community, I would certainly urge that every possible effort of the voluntary and official agencies be directed against this scourge.

On the other hand, in a community like Syracuse, where the death rate is 30 per 100,000, we find a very different setup. The local affiliate of the National Tuberculosis Association, the Onondaga Health Association which serves the county in which Syracuse is located, conducts not only a tuberculosis eradication program, but an extensive campaign including social hygiene,

heart disease work, mental hygiene, child health, cancer education, and virtually every element of a broadly conceived health promotion service. It is encouraging that a community like Syracuse which has accomplished so much in the tuberculosis field still continues to be actively and enthusiastically interested in the work. In 1945 the Onondaga Health Association enjoyed a per capita income of 18 cents from the Christmas Seal Sale. This is a generous figure for a tuberculosis agency. Nothing apparently has been lost by the broadening of its program.

These two cities can serve as pegs on which to hang the rest of our discussion. Clearly, local conditions are not all white or all black. Because of the great variations in our states and cities it is up to each tuberculosis society to take note of the picture in its state and local area and to adapt its program accordingly. A great many associations have already shown readiness to broaden their health programs. The National Tuberculosis Association has taken note of this tendency and has for some time made it possible for those affiliated societies that were ready to obtain approval through their state organizations for extra-tuberculosis work. Thus, the state affiliates in New York, California, Oregon, and in seven other states have already received the approval of the National Association to proceed along these lines. I am greatly encouraged by the recent trend of National Association policy in this matter. As one who has been active in the tuberculosis field for many years and closely associated with the operations of the Association, I have long felt that there was a policy of over-caution in granting permission to affiliates to carry on extracurricular activities. This bridge has now been crossed. This was accomplished last year in the adoption of the Report of the Joint Committee on Programs of Tuberculosis Associations



under the leadership of President Ross and of Drs. Amberson and Shepard of the National Tuberculosis Association, and of Mr. Auerbach of the National Conference of Tuberculosis Secretaries. Their report embodies a much more liberal policy in this field. As I understand it, the National Association actually undertakes to encourage those state and local agencies operating in areas which have low tuberculosis rates and satisfactory official tuberculosis control programs, to employ some of their funds for activities other than those classified as tuberculosis work. The door has been opened wider and it is now up to the affiliates to take advantage of the opportunity and to prepare themselves to carry on the broader work which is clearly called for in numerous states and communities.

The problem thus has shifted very largely from the national to the state and local scene, and it is there that I am sure there is much room for study and enlightened action. I can perhaps best illustrate what is in mind by referring to my experience as a member of the board of such a local Tuberculosis and Health Association. I have been a member of this board continuously for more than 30 years. For some time now I have recommended to the budget committee such extensions of the program as could profitably be undertaken. An effort was made to broaden the base of operations, and activities in such fields as venereal disease, heart disease, dental hygiene, industrial hygiene, and diabetes, did find a place in the program, thus justifying its name as a health as well as a tuberculosis society. But little by little this program has been whittled away because the budget committee has failed to support these additional activities anywhere near adequately.

First the work in diabetes was dropped and was taken over by a new agency which has since been struggling

for public support. More recently the heart disease program was dropped, and thus another agency was compelled to seek support on its own account. Relatively little is available now for venereal disease control and for dental hygiene. Thus, in the current budget of \$376,000, only \$4,100 is available for dental hygiene, and \$17,500 specifically designated for social hygiene. Some additional moneys for these services are available under such other designations as Health Education, General Services and Administration, but the amounts involved are small. The present budgetary policy is almost tantamount to discontinuing these services and impelling the groups that are especially interested in them to go out on their own. In the past the excuse given by this Association for curtailing non-tuberculosis work was the alleged opposition of the Board of Directors of the National Tuberculosis Association. Whatever substance this excuse may have had, and I think it was exaggerated, has now disappeared. As a result of its policy, moreover, the local association has lost a great opportunity for service and it has alienated the interest of many influential lay and professional leaders. It could have been the spearhead of a movement to coordinate the voluntary health services in a great metropolitan center. Instead, it has hindered such action, and in the end will be just one more agency, even if a large one, in such a coordinated group.

Our job today in the state and local affiliates is, therefore, to overcome the inertia or opposition that either represents a carry-over from the days before the Board of the National Association had broadened its policy, or reflects the ingrained conservatism of some local leaders or some tuberculosis secretaries. In many of these state and local affiliates the board of directors is composed largely of physicians interested

primarily in tuberculosis. Generally they determine policy, and their decisions are often restricted by their special interest. There is need, far and wide, for a realization that the tuberculosis societies are not professional medical groups but are essentially public institutions. As so often happens, the professional group has come to be the dominant, even the sole voice. I think we must change the trend and, in a manner of speaking, turn the societies back to the public which supports them. The time has come for a larger representation on the directing boards of professional and lay persons who have a broad outlook in the fields of public health and social welfare, as well as a live interest in finishing the tuberculosis job.

The National Association, within proper limits, can do much to stimulate such a movement. In addition to its present broader policy, it can well afford to promote the extension of the general activities of its affiliates wherever circumstances warrant. It could now profitably make a careful survey of the actual activities of its member societies. In this way it would be possible to determine where and how rapidly broader health programs can be undertaken. Indeed, a knowledge of the local facts will itself expedite the development of better programs.

I would emphasize at this point that there is no set pattern for extension of these supplementary activities. Just what new responsibilities a local society can assume, or how it should operate in a new field will depend largely on local circumstances. In many cases the health field is wide open, but one or two major neglected health problems may be all that can be handled effectively. In some of the larger cities there are other organizations already working in specific health fields, and there the job is either to pick out some neglected field for cultivation or to work in close coop-

eration with the other societies. In communities where there is good coordination of the activities of voluntary health agencies, the job may be largely a matter of helping to organize or finance a useful project on which one of the other agencies needs help.

Paralleling such a program by the National Tuberculosis Association for promoting the expansion of extra-tuberculosis activities of its affiliates, the trend of the times calls for a restudy of the relationship of the National Tuberculosis Association to the other health agencies associated with it in the National Health Council. Obviously on the national level the major concern of the National Tuberculosis Association must be in its own field. Yet the effectiveness of the national health agencies in their attack on the health problems of the nation would be greatly strengthened by increased coordination of the work of the national bodies. In line with their common interests there are many fields in which they can work together, as, for example, in the promotion of health education and of better housing. Nation-wide projects and studies in the fields of health and disease would be done better if the national groups involved joined together in such efforts. A variety of joint field services could be launched over the country. There are common grounds of interest in personnel training which could be developed. Fund raising, by joint action of certain societies which have expressed their readiness to proceed, could be put on a sounder and more efficient basis, and in view of the lack of relationship between needs and resources, the more adequately supported agencies might agree to help out their poor relations. After all, whatever our specific interest is, our common objective is to raise the health level of the American people.

It would be good statesmanship and good public relations for the National

Tuberculosis Association and the other agencies to go forward along these lines. The public is prepared for such a step and would welcome it heartily. I need hardly tell you what a stir has been made in our thinking by the publication of the Gunn-Platt report.\* This is a down-to-earth study of the voluntary health movement quite generally over the country. It is no theoretical report, but represents rather the matured observations of two skilled men working with an advisory group of proved leaders. Their findings represent a good cross-section of the condition and activities of the many voluntary health agencies. The work was subjected to careful scrutiny and thorough criticism by all parties interested.

One of the main conclusions of this study is that the people in our local communities are becoming more and more critical, if not resentful, of the multiplicity of drives for the support of voluntary health and welfare agencies. Many are fed up with the importunities of the dozens of appeals for funds. There are in too many places too many societies. By the very nature of their multiplicity they are weak, inadequately administered, and unable to command the leadership or resources to do an effective job. Unless we are all hopelessly mistaken, there is a wholesome trend in the direction of correcting this situation by coördinating effort on the local level and thus strengthening societies to the point where they can be more effective. It is, therefore, all the more desirable and opportune for local tuberculosis societies to take note of the situation and, wherever it is possible, to expand their functions or to work closely with other agencies on problems of mutual concern. This would make them truly effective tuberculosis and health associations.

In my own State of New York, we have perhaps the most effective demonstration in the nation of the wisdom of the proposed setup for a tuberculosis society. I refer to the State Charities Aid Association under the brilliant leadership of Homer Folks and George Nelbach. This society's Committee on Tuberculosis and Public Health is the affiliate of the National Tuberculosis Association for New York State (outside New York City). As far back as 1913, it began to extend its program of activities outside the field of tuberculosis. In that year it used funds from the 1912 Seal Sale to promote the enactment of far-reaching changes in the Public Health Law of the state. This led to the reorganization of the State Health Department, the trebling of its appropriations, and to a great improvement in the quality of the official health services. As far back as 1920 the organization changed its name from the Committee on the Prevention of Tuberculosis to the Committee on Tuberculosis and Public Health. In 1921 the committee promoted the enactment of a statute giving the county boards of supervisors the power to create county health departments, with full-time health officers, and the next year it promoted the passage of the Act under which the state adopted the policy of matching dollar for dollar the public health appropriations made by the county boards. In 1926 the committee initiated the drive to eradicate diphtheria. In 1932 Christmas Seal funds began to be used in the fight against venereal diseases. Last year, the association obtained authority to use funds for heart disease work and already two local groups in the association have a definite program in that field. This expansion of the association's activities has not diminished one iota either the effectiveness of the tuberculosis program or the financial support given to the agency. Quite the con-

\* Gunn, Selskar M., and Platt, Philip S. *Voluntary Health Agencies—An Interpretive Study*. New York: Ronald Press, 1945.

trary! Since 1940 the sale of Christmas Seals in the area served by the agency has increased from \$469,000 to a little over a million dollars in the 1945 campaign. The area covered has a population of over 6,000,000. The per capita income from Christmas Seals, 17 cents, is among the highest in the country.

You in California also have gone through the same development that I am urging on the entire movement. For many years now you have functioned both as a tuberculosis and health agency, although it was only two years ago that this was recognized in the name of the association. Broadening your scope has caused you no loss of prestige. The effectiveness of your tuberculosis program is undiminished. Financial support from the public has continued to improve. Thus, everything has been gained and nothing lost.

I am tempted to say a few more words about your situation, as an outsider sees it. Certainly you have a difficult and complicated health problem with your diverse race stocks and their high tuberculosis rates, and the popularity of the state as a place to take the cure or to convalesce. Wartime migration and the influx of Negroes has

not made it any easier for you. You have a real tuberculosis problem which calls for concentrated effort. At the same time you have the wisdom to see that the tuberculosis program itself is strengthened by a broad frontal attack on the health problem as a whole. Yours has not been a narrow vision. I sincerely hope that you will continue to work along these lines and to serve as a brilliant example of the new and more effective approach to the problem of tuberculosis control.

To sum up, then, it is my considered judgment that the future work of the tuberculosis societies should be broadly based. Such a policy would be wise in view of the continuing improvement in our tuberculosis situation. We must not wait too long lest we find ourselves in the embarrassing position of attempting to raise large sums of money and conducting campaigns which lack sincerity and the elements of reality. It is far better that we ourselves take leadership in widening the scope of our health operations rather than be pushed to it by a critical public. Now is the time for the movement to take the initiative in anticipation of achieving our goal—the eradication of tuberculosis from our country.

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## The National Social Welfare Assembly Issues Director's Notes

August saw the first issue of "Notes from the Director" of the National Social Welfare Assembly. It announces that "from time to time" the Director "will prepare notes of happenings and things to come." This first issue reports on a variety of items—the creation of a Youth Di-

vision, plans for field service, for an international social welfare organization, a report on Service to Veterans, and on forums on varied current social problems.

The Director of the Assembly is Robert E. Bondy; its address is 1790 Broadway, New York 19.

# Procedure for Bacteriological Examination of Brined, Salted, and Pickled Vegetables and Vegetable Products\*

JOHN L. ETCHELLS, PH.D., AND IVAN D. JONES, PH.D.

*Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Department of Agriculture, Raleigh, N. C.; and Department of Horticulture, North Carolina Agricultural Experiment Station, Raleigh, N. C.*

THE tentative methods described are presented for the examination of certain brined, salted, and pickled vegetables and vegetable products. The products given consideration are broadly classified as follows:

## I. CUCUMBER PICKLES AND SIMILAR PICKLE PRODUCTS

### A. Salt Stock for Cured Pickle Products

1. Cucumbers (and onions, peppers, tomatoes, cauliflower, melon rinds, etc.)
2. Genuine dill pickles (from cucumbers or tomatoes)

### B. Finished Pickle Products from Brine-cured Stock

1. Sweets
2. Sours
3. Mixed
4. Relishes
5. Artificial or Processed Dills

### C. Types of Pasteurized Pickles (Not brine-cured)

1. Dills (sliced or whole)
2. Sweets (sliced or whole)
3. Relishes (mixed vegetable)

4. Vegetables other than cucumbers (onions, peppers, tomatoes, etc.)

## II. BRINED AND SALTED VEGETABLES FOR NON-PICKLE USE

### A. Brined

1. Okra (whole)
2. Celery (whole)
3. Sweet pepper hulls

### B. Dry-salted

1. Corn
2. Lima beans
3. Peas
4. Snap beans
5. Okra (cut)
6. Celery (cut)

General directions for collection, storage, transportation, and preparation of samples are given for the products as a whole. Individual discussion of products (IA, B, and C; IIA, and B) is presented chiefly as to: Introductory material of descriptive nature; microbial groups involved; significance of observations; and other remarks incident to the bacteriological examination. Directions for the preparation and use of differential culture media employed in the examination of the products are combined under a separate

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section. The media as listed are: BG, Brilliant Green Lactose Bile Agar; NC, Nutritive Caseinate Agar; AD, Acidified Dextrose Agar; LBS, Liver Broth Plus Salt; and LB, Liver Broth without Salt.\*

Procedure for microscopic examination and directions for determination of acidity, pH and salt are given from a general standpoint.

It should be pointed out that the bacteriological methods of examination presented herein are based essentially on methods previously used by the authors in studying the predominating microbial changes occurring in certain brined and salted vegetables undergoing natural fermentation. They have also been used to some extent in the examination of certain manufactured pickle products undergoing spoilage as evidenced by active fermentation of one or more microbial groups.<sup>1</sup>

For the types of material receiving consideration, examination for one or more of the following general classes of non-pathogenic microorganisms† should be given attention: Acid-forming bacteria, coliform bacteria, yeasts, molds, mycoderma,‡ salt-tolerant cocci, and obligate halophiles. Also, for any specific case involving a malodorous,

butyric acid fermentation, examination for butyric acid bacteria should be included.

An incubation temperature range of 32–35° C. is suggested for the mesophilic groups dealt with in this report. However, 35° has been found satisfactory for adequate growth of the eight groups of microorganisms that might be involved in various products listed. While it may be argued that a few degrees above or below 35° C. may be slightly better for the cultivation of a certain group, it does not seem sufficient cause wholly to justify recommendation of three or more specific incubation temperatures (32°, 35°, and 37° C.) to cover the mesophiles involved. Also, the diversity of standard incubation temperatures that have been suggested for growth of microorganisms in the examination of food products (particularly mesophiles having similar temperature requirements), is such that the average laboratory, especially those in the field, finds it impracticable, if not impossible, to meet these requirements, due to limited incubator facilities. Furthermore, the use of a temperature range of 30–32° C. in certain sections of the country cannot be maintained for about 4 months of the year without an incubator equipped with a refrigerator unit.

\* When a specific medium is referred to in the text for use in determining a group of organisms, it is identified for reference purposes by the proper abbreviation (e.g., BG for Brilliant Green Lactose Bile Agar) in parenthesis.

† The possibility of food poisoning microorganisms (and other pathogens) occurring in pickled, brined, or salted vegetables and vegetable products is generally considered somewhat remote. For this reason, methods of examination for these groups are not dealt with in this report. In event such specific examinations are required, accepted procedures should be used.<sup>2</sup>

‡ For convenience, the term "mycoderma" is used herein to denote the film-forming yeasts responsible for the luxuriant surface growth on cucumber pickle brines exposed to the air but sheltered from direct sunlight. While the expression is misleading, it is in common usage in the pickle industry. Actually, scum formation in the products to be discussed is probably not limited to the asporogenous yeasts of the *Mycoderma* genus but may well include sporogenous yeasts of one or more of the remaining genera (*Hansenula*, *Deboryomyces*, *Pichia*, *Zygoichia*) of film-forming yeasts.<sup>3, 4</sup>

#### COLLECTION, STORAGE, AND PREPARATION OF SAMPLES

*Collection of Samples* — Brine or pickle liquor covering the vegetable material is required for examination. The size of the container to be sampled may range from a small jar of pickles to a 1,000 bushel vat of fermenting salt-stock. Brine samples from large containers, such as vats and barrels, should be taken for bacteriological analysis as follows:

A suitable length of 3/16" stainless steel tubing (sealed at one end with lead or solder and perforated with sev-

eral 1/16" holes for a distance of 6-8" from the sealed end) is inserted through an opening in the false head, down into the brine toward the center of the vegetable material. The brine sample is withdrawn through a previously attached piece of rubber tubing into a 12 oz. juice bottle. The receiving bottle is fitted with a two-hole rubber stopper and two short lengths of glass tubing—one for the rubber tubing leading from the stainless steel sampling tube, and the other for a suction bulb to start the siphoning action. The length of the steel sampling tube to be used will be governed by the depth of the container to be sampled.

Approximately 24 oz. are withdrawn before taking the final sample (about 10 ml.) in a sterile test tube. If microbial changes during the fermentation are to be followed, sampling should be started at the time the material is salted or brined and continued at regular intervals (one to two days) during active fermentation.

For tightly headed barrels, such as are used for genuine dills and salted vegetables for non-pickle use, the sample should be taken through the top or side bung.

For smaller containers, such as jars or cans of pickle products, the sample, after a thorough shaking, is taken directly from the center of the material by use of a sterile pipette. Tops of metal cans should first be washed with alcohol, flamed, and punctured. A "Canco" beer can opener is very useful for puncturing metal tops. If the containers show evidence of gas pressure, first release the gas carefully by puncturing the top with a flamed ice pick.

Brine samples for subsequent chemical determinations can be preserved by the addition of sodium 2,4,5 trichlorophenolate (Dow) sufficient to make a dilution of about 1-10,000 as described by Veldhuis.<sup>5</sup> The samples are collected in standard crown finish bottles,

such as beer bottles or soft drink bottles, of convenient size (6 to 12 oz. capacity). About 10 drops of a 10 per cent aqueous solution of the chemical is added for 12 oz. samples. The bottles are capped with 26 mm. crown closures, using a hand operated beer bottle capper, and are shaken to distribute the chemical. Crown closures having cork or composition cork liners alone are not satisfactory for prolonged storage of samples. For this purpose, caps having an additional "spot" liner of the "panaseal" or "vinylite" type should be used.\*

Samples preserved with the above chemical compound are unfit for human consumption.

*Storage of Samples*—Brine samples from actively fermenting material cannot be satisfactorily stored or held under refrigerated conditions without marked changes taking place in the microbial flora present. For this reason, samples should be examined promptly after collection. The same is true for samples of packaged pickle products.

*Preparation of the Sample*—Suitable decimal dilutions of the brine or pickle liquor samples are made in the usual manner. These are plated on the various differential solid media, or inoculated into liquid media described under Preparation and Use of Media.

#### MICROSCOPIC EXAMINATION

Microscopic examination of the samples is helpful at times, particularly when carried out in conjunction with

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\* The same type of bottles (either amber or clear glass) and closures are suggested as containers for bacteriological media, especially for field work. The media are bottled at 65-70° C., capped, and then sterilized in the usual manner. About 250-300 ml. are put in a 12 oz. bottle. For media which are to be used in a relatively short time, bottles with screw type finish for use with caps having rubberized liners have been found more convenient to use. A bottle of melted medium can either be transferred to a sterile flask and promptly cooled for pouring, or, it can be allowed to cool in the bottle and poured. Bottles just out of the steamer should not be plunged into cold water.

plate count observations. Direct counts can be made if desired. The following procedure is suggested: Place 0.01 ml. portions of the fermenting brine or liquor in sequence on slides at each sampling interval. Where extremely high populations of organisms are suspected, a 1:10 dilution of the sample should be used. The smears are prepared and counted according to the method of Wang,<sup>6</sup> a modification of the Breed<sup>7</sup> technic. The preparations are stained according to the Kopeloff and Cohen<sup>8</sup> modification of the Gram stain. The actual counts are made on the basis of the numbers and morphological types of individual Gram-positive and Gram-negative cells present per ml. of brine.

#### TITRATABLE ACIDITY AND pH

Determinations of titratable acidity and pH of the samples are extremely useful in providing supplementary information in bacteriological analysis. Titratable acidity is determined on 5 or 10 ml. amounts of sample. The sample is diluted with 30–50 ml. of distilled water, brought just to boiling, cooled, then titrated with 0.10 N NaOH, using phenolphthalein as the indicator. For brine samples, the values should be calculated in terms of grams lactic acid per 100 ml. of sample; for liquor samples from packaged pickle products, in terms of acetic acid. Where only a small amount of original sample is available, a 2 ml. sample can be used for titration purposes. The pH determinations are made with the glass electrode.

#### SALT

In the microbiological examination of brines, knowing the approximate salt content is often helpful. This can be obtained by use of a salometer providing sufficient sample is available (about 100 ml.). For small amounts of sample, a chemical test for salt<sup>9</sup> is required.

### EXAMINATION PROCEDURE

#### I. CUCUMBER PICKLES AND SIMILAR PICKLE PRODUCTS

The three main classes of products under this heading are: Salt stock vegetables and genuine dills; finished or packaged pickle products made from salt stock; and types of pasteurized pickle made from fresh stock. The cucumber is the principal vegetable involved, although substantial amounts of other vegetables, such as onions, peppers, cauliflower, and green tomatoes, may be used in mixed pickle, relishes, or as individual products.

##### A. *Salt Stock Vegetables and Genuine Dills*

Examine the fermenting brines by the plating technique with respect to the following: Total count (NC); coliform bacteria (BG); lactic acid bacteria (NC); and yeasts (AD). For brines of high salt concentration, 15 per cent salt and above, consideration should also be given to the salt-tolerant cocci (NC) and obligate halophiles (LBS). Under curing and storage conditions where the brine surface is exposed to the air and sheltered from direct sunlight, examine for molds and mycoderma (AD). In any instance where a malodorous fermentation is observed, examine brine samples for the butyric acid group (LB).

*Significance of Observations*—The acid fermentation, resulting from active growth of the lactic acid bacteria, is to be expected at brine concentrations below 15 per cent strength.<sup>10</sup> The developed brine acidity in combination with the salt results in preservation of the salt stock and genuine dills.

Activity by the coliforms and yeasts is associated with a gaseous fermentation. This may bring about a condition in salt stock cucumbers and dill pickles known as "bloaters" or hollow cucumbers. Although both groups of organisms are extremely salt-tolerant



(20 per cent or above), the coliform bacteria are not acid-tolerant and are not usually found in brines having appreciable acidity. The exception to this may be found in cases of highly buffered material, such as dry-salted peas.

Luxuriant growth of mycoderma scum may occur at various salt concentrations and will result in loss of brine acidity. When molds accompany scum growth, the texture of the vegetable material may be seriously affected. Heavy scum and/or mold growth is the result of neglect in looking after brined material during the curing and storage period.

The significance of the presence of the salt-tolerant cocci and obligate halophiles is presented under Brined and Salted Vegetables for Non-pickle Use.

### B. Finished Pickle Products

Fully cured salt stock vegetables are made into various types of finished pickle products by a series of operations involving leaching out most of the salt, souring with vinegar, and then sweetening with sugar. With these products, preservation<sup>e</sup> is dependent upon sufficient amounts of vinegar alone<sup>e</sup> (for sour pickles) or a combination of vinegar and sugar (for sweet pickles) being used. If such is not the case fermentation principally by two groups of organisms—the lactic acid bacteria and the yeasts—will usually take place. Molds and mycoderma may also grow on the surface of the liquor, chiefly as the result of faulty jar closure.

Examination of the liquor sample should be made for: Total count (NC); acid-forming bacteria (NC) and yeasts, molds, and mycoderma (AD). In undisturbed sample jars, the growth of surface mold and scum growth may be obvious. It should be carefully removed after first recording the extent of growth, since if shaken up with the

sample, it will only complicate the counts for acid formers and yeasts when the latter groups are present. Examination for coliform bacteria, salt-tolerant cocci, halophiles, and butyric acid bacteria is not normally required due to the acidity of these products.

A total count of a few thousand organisms per ml. is normally found in unspoiled pickle products. These counts are composed chiefly of resistant, aerobic spore-types that remain inactive in the acid medium of the pickle liquor.

*Significance of Observations*—Active yeast fermentation in the product is usually characterized by vigorous gas production so that the liquor becomes highly charged with gas and possesses a stinging taste. Gas production may be sufficient to blow lids off jars having vacuum type closures; to break jars having screw-type lids; or burst sealed cans.<sup>11</sup>

The acid content of the liquor may be increased due to the activity of the acid-producing bacteria. Also, whole pickles may become "bloaters" (hollow) due to the gaseous fermentation by yeasts and/or gas-producing types of acid-producing bacteria.<sup>11</sup>

Extensive mold and mycoderma growth usually result in a reduction in acidity of the liquor, and, in advanced stages, the vegetable may be completely softened due to such growth.

### C. Pasteurized Types of Pickle

In general, pasteurization is required (165° F. for 15 min.) for pickle products that do not contain sufficient amounts of added vinegar and sugar to stop fermentation by certain organisms. There are probably a dozen or more different types of cucumber pickle that fall in this classification, such as various types of fresh dills; fresh, sliced cucumber pickle; and low-acid and -sugar sweet pickle (from salt stock). Also, many non-cucumber products are included (e.g., dilled tomatoes, sweet

peppers, and fresh vegetable relishes) that are prepared from uncured stock.

Spoilage occurs in this class of products when they are improperly pasteurized, and is due chiefly to yeasts and/or acid-forming bacteria that survive the faulty heat treatment. Molds and mycoderma scum are factors principally in cases of poor jar closure.

The examination should be conducted as described under "B" (Finished Pickle Products). Also, the significance of results is essentially the same as described under that heading.

## II. BRINED AND SALTED VEGETABLES FOR NON-PICKLE USE

Brined and salted vegetables such as green peas, corn, snap beans, okra, and celery are included in this classification. They differ from products previously mentioned in that they are used in the preparation of soups, mixed vegetables, and strained vegetable products.\*

Most of the vegetables, after blanching, are preserved according to the dry-salting method,<sup>12</sup> using a ratio of 1:5 with respect to salt and vegetable weight, and stored in tightly headed wooden casks, preferably at refrigerator temperature within the range of 1.7 to 4.4° C. (35–40° F.). Celery and okra in the whole state are usually brined at about 20 per cent salt concentration rather than dry-salted. The same is true for sweet red peppers.

Brine samples should be examined for: Total count (NC); acid-forming bacteria (NC); coliform bacteria (BG); salt-tolerant cocci (NC); yeasts, molds, and mycoderma (AD); and obligate halophiles (LBS). In cases where malodorous fermentation is suspected, examine for the butyric acid group (LB). However, the brine concentrations usually encountered would

be considered somewhat above their usual tolerance. The same is true for the acid-forming bacteria of the lactic group.

*Significance of Observations*—With these products, gaseous fermentation is associated with active development of the coliform bacteria, the yeasts, and the obligate halophiles, all of which can tolerate the high salt concentrations (15 per cent and above) normally employed for preservation. Either one or more of the above groups may be present. Gas pressure may be sufficient to burst the barrels. The flavor and appearance of the material may also be altered by the growth of the above groups.

High populations of the salt-tolerant cocci may be found over an extended period in the brines, particularly in those containing no appreciable amount of developed acidity. These organisms are extremely salt-tolerant but not acid-tolerant. Their fermentation is not gaseous in nature and no outstanding change in the product has been attributed to their presence; although small amounts of brine acidity may be produced under conditions providing reduced oxygen tension. When numerous colonies showing a decided acid reaction are found on the plates, they should be carefully examined. The chances are they will not be acid-producing bacteria of the lactic group, as might first be suspected, but rather acid-producing cocci types. This is particularly true in cases where the brine concentration is above 15 per cent salt.

Growth of molds and mycoderma scum is apt to be a factor where there is air above the brine surface in the container. Unrestricted growth by molds may seriously affect the texture and flavor of the vegetable material. Heavy scum growth is undesirable, principally from the flavor standpoint. Casks should be kept filled with brine at all times, irrespective of storage temperature.

\* An estimated 50,000 tons of salt preserved vegetables were used in this manner yearly during 1942–1945. Under peacetime conditions, okra, celery, and sweet red peppers are probably the chief vegetables salt preserved for non-pickle use.

As mentioned earlier, refrigerated storage (about 1.7° C.) of these brined and salted products is preferred. Under such conditions, and at salt concentrations of 15 per cent and above, microbial activity of the various groups may be greatly restricted. However, at salt concentrations in the range of 10 per cent strength, the cocci may readily grow at about 1.7° C. (35° F.).

In the absence of refrigerated storage conditions, the microbial changes may continue to take place over a period of months.

#### PREPARATION AND USE OF MEDIA

##### (BG) *Brilliant Green Lactose Bile Agar*<sup>13</sup>

*Coliform Bacteria*—The above medium, Difco formula, has been found satisfactory for estimating the relative populations of the coliform bacteria during the fermentation of a number of brined and salted vegetables. The medium is prepared and used according to the directions supplied with the dehydrated product. Strict attention should be paid to the medium's sensitivity to light and preferably it should be prepared just prior to use. When this is not convenient, the prepared medium should be stored in the dark. Subsurface colonies of coliform bacteria are deep red in color against the blue background of the medium.

Incubate plates 18 hours at 32–35° C., and record the number of coliform colonies per ml. of brine or liquor examined.

Violet Red Bile Agar (Difco formula) is also suggested for use for the enumeration of the coliform organisms. It should be prepared and used according to the directions provided with the dehydrated product. For further information as to the nature of the coliform organisms present on the plating medium used, the representative colonies can be streaked on Levin's eosin-methylene-blue agar. Identification

studies on isolates of coliform bacteria from cucumber fermentation<sup>14</sup> showed that they belonged to the genus *Aerobacter*; members of the *Escherichia* genus were not found.

##### (NC) *Nutritive Caseinate Agar* (Difco)

This medium has proved most successful for determining population trends of acid-producing bacteria during the fermentation of: dill pickles<sup>15</sup>; cucumbers for salt stock<sup>10</sup>; improperly pasteurized fresh cucumber pickle<sup>1</sup>; and, also, in connection with the fermentation of a number of other brined and salted vegetables. It is also used for enumerating total count, salt-tolerant cocci, and peptonizing bacteria.

Prepare the medium for use according to the directions provided with the dehydrated product, but add 0.04 gm. of solid brom-cresol-purple per liter as an indicator. Since Nutritive Caseinate Agar contains less agar than the usual solid media, care should be exercised in the amount of medium poured per plate, as well as in cooling the plates, to avoid solidification difficulties. Not over 15 ml. of medium should be used per plate to insure a reasonable solidification time, and, during hot weather, facilities for cooling the plates will prove helpful.

*Acid-forming Bacteria*—These organisms show a zone of precipitated casein and a yellow color about the colony on Nutritive Caseinate Agar. The degree of casein precipitation and change in indicator may vary, depending on the activity and type of acid-former present. Subsurface colonies range in size from about 0.5 to 2.5 mm. and are mostly elliptical in shape. Surface growth is usually poor.

As a rule, yeasts, other than lactose fermenters, do not grow out well on Nutritive Caseinate Agar. Furthermore, yeasts tend to give a slightly alkaline reaction to the medium, as contrasted with the acid-forming bac-

teria just mentioned. In cases where doubt exists as to whether yeast counts are being confused by the presence of acid-forming bacteria, the colonies should be stained.

Occasionally a high percentage of tiny (0.1 mm. or less) acid-forming colonies is found in certain vegetable fermentations. The growth of these poor lactose-fermenters is often greatly enhanced by the addition of 0.1 per cent dextrose to the medium. The additional dextrose will likewise enhance the growth of yeasts if present in the sample. For this reason careful examination for yeasts should always be made when the dextrose supplement is added to Nutritive Caseinate Agar.

*Salt-tolerant Cocci*—While Nutritive Caseinate Agar is not considered a differential medium for the salt-tolerant coccus forms, it may be used for estimating the numbers of these organisms present in brines of high salt concentration. Differentiation is based on the characteristics of the colonies on the agar and by stained preparations from the principal colonies present. In routine examination of brines of high salt concentration, these organisms, as a rule, are the principal types found on the above mentioned medium. Their presence is usually indicated by two predominating types of colony—a greyish white, entire, glistening colony of moderate size and a similar colony that is light orange to yellow in color. The subsurface colonies are elliptical to lenticular in shape. The cells of the white colony type are distinctly smaller than those of the pigmented variety. Due to their sensitivity to brine acidity, they are not usually encountered in fermentations where active growth of the acid-forming bacteria has taken place (i.e., brines containing up to 15 per cent salt by weight). Deep subsurface colonies of some of the cocci may give an acid reaction to the indicator in the medium, but on prolonged incubation

the reaction becomes alkaline. In highly buffered salted vegetables, at salt concentrations bordering on the range of salt tolerance for the acid-forming bacteria, care should be exercised that such acid-producing colonies are not recorded as true acid-producing bacteria of the lactic group.

The plates are incubated 3 days at 32–35° C. and first counted as to total colonies, acid-forming colonies, and cocci colonies per ml. of brine or liquor examined. For an estimate of the number of peptonizing bacteria, the plates (after recording total, acid-former, and cocci counts) are then flooded with a 5 per cent solution of glacial acetic acid. The colonies surrounded by clear zones are recorded as peptonizing bacteria.

(AD) *Acidified Dextrose Agar*<sup>16</sup>

*Yeasts*—Yeast populations in fermenting vegetable brines<sup>17</sup> and pickle products<sup>1, 15</sup> can be detected by the use of Acidified Dextrose Agar. This medium consists of ordinary Dextrose Agar (Difco formula) to which 5 ml. of sterile 5 per cent tartaric acid is added per 100 ml. of the melted agar prior to pouring the plates. The addition of the tartaric acid brings the pH of the medium to the range of 3.5–3.7 and thereby inhibits active development of the other usual brine organisms.

*Yeasts in High Salt Brines*—Occasionally yeasts are found at high salt concentrations, 15 to 20 per cent, that will not grow well on the medium containing the amount of tartaric acid indicated above.<sup>14</sup> A medium containing 3 ml. rather than 5 ml. of the acid per 100 ml. of melted agar usually corrects this condition. However, the modified medium should not be used where the salt content of the sample is known to be much below 15 per cent because acid-forming colonies, if present, will grow sufficiently to confuse the yeast count. During the active fermentation

TABLE 1  
*Guide to the Bacteriological Examination of Certain Brined, Salted, and Pickled Vegetables and Vegetable Products*

<i>Microbial Group Involved</i>	<i>Culture Medium Used (and Abbreviation)</i>	<i>Classes of Fermenting Products in Which Microbial Group Is Likely to Be Present<sup>a</sup></i>	<i>Remarks Concerning Microbial Groups</i>
Coliform bacteria	Brilliant green lactose bile agar (BG) or violet red bile agar	IA: Fermenting salt stock vegetables and genuine dills. IIA&B: Brined and salted vegetables for non-pickle use.	Gaseous fermentation. Group salt-tolerant but not acid-tolerant. Most likely absent from finished pickles due to acid content; same is true for brines when appreciable acid is present.
Acid-forming bacteria	Nutritive caseinate agar <sup>1</sup> (NC)	IA: Fermenting salt stock vegetables and genuine dills. IB: Finished pickle products. IC: Pasteurized pickle products.	Acid fermentation. Salt-tolerant up to 15 per cent; not likely to be found in brined and salted vegetables above this concentration (IIA&B)
Salt-tolerant cocci	Nutritive caseinate agar	IIA&B: Brined and salted vegetables for non-pickle use; also, other high salt vegetables without appreciable acidity.	No outstanding characteristics of fermentation reported. Group salt-tolerant but sensitive to acid. Can grow at refrigerator temperature (1.7° C.) at approximately 10 per cent salt.
Yeasts, mycoderma <sup>2</sup> and molds	Acidified dextrose agar (AD)	All classes of products (IA, B&C, & IIA&B) for yeasts. Molds and mycoderma on liquid surface of products exposed to air and sheltered from sunlight.	Yeasts: gaseous fermentation; acid- and salt-tolerant. Molds and mycoderma: acid- and salt-tolerant; both groups utilize acid of products and require free oxygen for growth.
Obligate halophiles	Liver broth plus salt (LBS)	IIA&B: Brined and salted vegetables for non-pickle use. Also, in other vegetable brines at high salt concentration.	Gaseous fermentation. Group requires about 15 per cent salt in culture medium and reduced oxygen tension. Sensitive to acid. General fermentation behavior not well known.
Butyric acid group	Liver broth plus particles (without salt) (LB)	Uncommon in brined and salted vegetables; examination should be made if malodorous fermentation is detected.	Malodorous, gaseous fermentation. Not particularly acid- or salt-tolerant. Active fermentations rare in properly brined or salted vegetables.

<sup>1</sup> Also used for total plate count.

<sup>2</sup> Refer to outline for more detailed classification of products listed under IA, B, and C, and IIA and B.

<sup>3</sup> Refers to film-forming yeasts in general.

of high-acid producers of the lactic group, some tiny colonies may begin to show through, even when the full amount of tartaric acid is used. In such cases, numerous small, undeveloped acid-producing colonies form a halo effect about the yeast colonies where the acid reaction is presumably of less concentration than the surrounding medium. Acidified Dextrose Agar is definitely preferred for detecting yeasts in brines rather than Wort or Malt Agar, since the pH values (about 4.5 and 5.5, respectively) for the latter media are much less inhibitive for the lactic acid bacteria.

*Mycoderma and Molds* — Certain conditions, i.e., available free oxygen and absence of direct sunlight, may permit active growth of mycoderma scum and molds on the surface of brined and pickled material. These organisms will grow out on Acidified Dextrose Agar. Molds and yeasts can readily be distinguished by the difference in the appearance of their colonies, whereas routine differentiation of yeasts and mycoderma may present some difficulty. An estimate of the numbers of the scum-yeast group occurring in the brine or liquor sample, mostly as the result of surface scum development, can be made as follows: Surface colonies of yeasts indicative of mycoderma scum are normally flat, dull, irregular and spreading as contrasted with raised, round, white, glistening and entire brine yeast colonies. Subsurface scum yeast colonies appear white and fuzzy, whereas brine yeasts are mostly elliptical and entire. Mycoderma scum colonies when stained appear to be made up of rather large, irregular, elongated cells. In the absence of storage conditions suitable for scum growth, such colonies are rarely found.

Incubate plates 3 days at 32–35° C. and record number of yeast, mycoderma, and mold colonies per ml. of brine or liquor examined.

When yeast colonies are not well developed within 3 days, the incubation period is extended to 5 days.

#### (LBS) *Liver Broth Plus Salt*

*Obligate Halophiles*—This medium is intended for the detection of the gas-producing, Gram-negative, obligate halophilic bacteria that have been observed by the authors in dry-salted and brined corn at 17 and 21 per cent salt respectively. Either Liver Agar containing 15 per cent salt, or Liver Broth Plus Salt can be used. The liquid medium is probably more convenient to handle. The basic liver medium is prepared according to the following formula of Cameron<sup>18</sup>:

Ground beef liver is mixed with water in the proportion of 500 gm. to 1,000 ml. This mixture is boiled slowly for one hour, adjusted to approximately pH 7.0, and boiled for an additional 10 minutes, after which the boiled material is pressed through cheese cloth and the liquid is made to 1,000 ml. To the broth are added 10 gm. of peptone and 1 gm. of dipotassium phosphate. The reaction is adjusted to pH 7.0 . . .

Fifteen per cent salt (c.p.) by weight is added to the broth which is readjusted to pH 7.0 and then put in  $\frac{5}{8}$ " x 6" tubes containing about  $\frac{1}{2}$ " of partially dried liver particles remaining from preparation of the broth. The tubes are autoclaved at 15 lb. pressure for 20 minutes. For Liver Agar add 1.25 per cent agar to the broth, bring to a boil to dissolve, tube, and sterilize. Tubes of the media, previously boiled and cooled, are inoculated with decimal dilution of the sample and sealed with 1–2 ml. of sterile, melted petroleum jelly. Positive tubes are indicated by raising of the petroleum seal due to gas production and absence of any distinctive odor.

Incubate tubes at 32–35° C. for 1 week and record positives daily.

No interference has been encountered to date by the growth of the coliforms or yeasts in this medium during the test

for obligate halophiles. Such might be anticipated, provided they were present in the sample, since both groups grow readily in fermenting vegetable brines at high salt concentration, and both are gas producers. The lack of interference is presumably due to their known inability to initiate satisfactory growth in laboratory media at even moderately high salt concentration without previous subculturing. Also, the reduced oxygen tension of the medium probably exerts a retarding effect. Nevertheless, it is desirable to make routine determinations for the yeasts and coliform bacteria, including stained preparations, on any brine that is being examined for obligate halophiles.

(LB) *Liver Broth Plus Particles (without salt)*

*Butyric Acid Group*—Liver Broth Plus Particles is recommended<sup>18</sup> for the detection of saccharolytic and putrefactive mesophilic anaerobes. For brine samples, neutralize the acidity with an excess of sterile calcium carbonate, and heat a 50 to 100 ml. sample in a water bath to 80° C. for 20 minutes so that only viable spores remain. Inoculate decimal dilutions of the heated sample into previously boiled and cooled tubes of Liver Broth Plus Particles, and stratify with melted sterile petroleum jelly or plain agar. Positive cultures are indicated by gas production and a strong butyric acid odor; the more putrefactive anaerobes give a putrid odor, and may decompose the liver particles.

Incubate tubes at 32–35° C. for one week, observe daily, and record positives.

A positive test merely gives presumptive evidence as to the presence of mesophilic, sport-forming, gas-producing anaerobes. For further information as to the saccharolytic or putrefactive nature of the cultures, specific

bacteriological tests are required on the isolates from positive tubes.

It should also be pointed out that the test for growth of spores from boiled samples for certain members of this group of organisms is not necessarily a reliable index to their previous activity. Spore formation may be negligible prior to inhibition or death of the vegetative cells, due to acid production in the presence of a readily fermentable carbohydrate. Nevertheless, active growth would be associated with a malodorous fermentation.

#### SUMMARY OF PROCEDURE

A summarization of the bacteriological methods described herein is presented in Table 1. This information is suggested for use as a guide in the examination of certain brined, salted, and pickled vegetables and vegetable products.

#### REFERENCES

1. Etchells, J. L., and Jones, I. D. Pasteurization of Pickle Products. *Fruit Prod. J.*, 21:330–332 (July), 1942.
2. American Public Health Association. *Diagnostic Procedures and Reagents*. New York, N. Y., 1941, 352 pp.
3. Henrici, A. T. The Yeasts: Genetics, Cytology, Variation, Classification and Identification. *Bact. Rev.*, 5:97–179 (June), 1941.
4. Mrak, E. M., and Bonar, L. Film Yeasts from Pickle Brines. *Zentralbl. j. Bakt., Abt. II*, 100: 289–294, 1939.
5. Veldhuis, M. K. The Preservation of Brine Samples for Chemical Analysis. *Fruit Prod. J.*, 18: 6–7 (Sept.), 1938.
6. Wang, Shu-Hsien. A Direct Smear Method for Counting Microscopic Particles in Fluid Suspension. *J. Bact.*, 42:297–319, 1941.
7. Breed, R. S. The Determination of Bacteria in Milk by Direct Microscopic Examination. *Zentralbl. j. Bakt., Abt. II*, 30:337–340, 1911.
8. Kopeloff, N., and Cohen, P. Further Studies on a Modification of the Gram Stain. *Stain Technol.*, 3:64–69, 1928.
9. Association of Official Agricultural Chemists. *Official and Tentative Methods of Analysis* . . . (5th ed.) Washington, D. C., 1940, 757 pp.
10. Etchells, J. L., and Jones, I. D. Bacteriological Changes in Cucumber Fermentation. *Food Indust.*, 15:54–56 (Feb.), 1943.
11. Etchells, J. L., and Jones, I. D. Procedure for Pasteurizing Pickle Products. *Glass Packer*, 23: 519–523; 546 (July), 1944.
12. Etchells, J. L., and Jones, I. D. Preservation of Vegetables by Salting or Brining. *U. S. Dept. Agr. Farmers' Bull.*, 1932 (Sept.), 1943, 14 pp.

13. Noble, R. E., and Tonney, F. O. A Solid Brilliant Green Lactose Bile Medium for Direct Plating. *J. Am. Water Works A.*, 27:108-120, 1935.

14. Etchells, J. L., Fabian, F. W., and Jones, I. D. The *Acrobacter* Fermentation of Cucumbers During Salting. *Michigan Agr. Exper. Sta. Tech. Bull.* 200 (June), 1945, 56 pp.

15. Jones, I. D., Veldhuis, M. K., Etchells, J. L., and Veerhoff, O. Chemical and Bacteriological

Changes in Dill-Pickle Brines During Fermentation. *Food Research*, 5:533-547 (Sept.-Oct.), 1940.

16. International Association of Milk Dealers. *Laboratory Manual* . . . Chicago, Ill., 1933, 461 pp.

17. Etchells, J. L. Incidence of Yeasts in Cucumber Fermentations. *Food Research*, 6:95-104, 1941.

18. Cameron, E. J. Report on Culture Media for Non-Acid Products. *J. Assoc. Off. Agr. Chem.*, 19: 433-438, 1936.

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## Mott Foundation Scholarships for Training of School Physicians

David Van der Slice, M.D., Director of the Children's Health Center of the Charles Stewart Mott Foundation of Flint, Mich., recently announced the selection of Arthur Tuuri, M.D., as the recipient of the 1946 scholarship awarded by the Foundation.

In making this announcement, Dr. Van der Slice also explained that the purpose of the scholarships is to afford means for training school physicians in public health and education to supplement the usual 2 years of training in pediatrics required for qualification for certification by the American Board of Pediatrics. One scholarship a year is awarded. The amount of the scholarship is \$2,400, paid \$100 a month during the period of the scholar-

ship. During the second year of residency, courses in public health and education, totalling 12 semester hours, will be taken at the University of Michigan. These can be applied against the hours required for a graduate degree in public health.

Persons eligible for the scholarship are: citizens of the U.S.A., graduates of a Class A medical school who have completed one year of rotating internship. Applications should be made to Dr. Van der Slice at Flint, by April 1.

Following his second year of scholarship, as resident in Pediatrics, Dr. Tuuri will serve a minimum of one year as school physician in Flint as a member of the staff of the Mott Foundation sponsored school health program.



# Small Sample Surveys As Adapted to a Cancer Program

EVELYN A. POTTER

*Biometrician, Division of Cancer and Other Chronic Diseases, Massachusetts  
Department of Public Health, Boston, Mass.*

A DESIRE to gauge the effectiveness of the cancer educational activities in Massachusetts, with the least expenditure of time and money, led to the adoption of the small sample survey as a feature of the Massachusetts Cancer Program.

## PROGRAM ACTIVITIES

During the past twenty years a continuous effort has been made in Massachusetts to acquaint the public with pertinent facts concerning cancer. It was realized that no matter how efficient and complete were the facilities for diagnosis and treatment, the cancer mortality rate could not be reduced unless the citizens availed themselves of these services. The initial attempts at education were made through large public meetings. These stimulated interest and laid the groundwork for the more intensive type of education which has been carried on during the past ten years.

During these ten years a Cooperative Cancer Control Committee, consisting of representatives from all local organizations, was formed in every community in Massachusetts. The committees have been the nucleus of local cancer education, sharing the work of cancer control with the medical profession. All physicians were personally reached and asked if they would consent to give addresses on cancer before local organizations and societies if they

were invited to do so. When assistance was requested the Cooperative Cancer Control Committees aided organizations in arranging these talks on cancer, which were included as a part of regularly scheduled meetings. Following the talks, question periods were encouraged and the informal atmosphere in these comparatively small groups was conducive to frank and impersonal discussions on the subject. This enabled the physicians to clarify the ideas which the audience expressed.

During the years of war it became increasingly difficult for the physicians to find the time for such educational activities, and other means had to be devised to bring basic and essential facts on cancer to the attention of the public. A bulletin containing news of the Cooperative Cancer Control Committees, as well as pertinent information on cancer, became one means of inspiring committees to greater activity. School programs were inaugurated to instill in young people a scientific interest so that the fears which have been prevalent would be supplanted by a hopeful attitude and an acceptance of present knowledge. Projects of local committees were encouraged, such as inaugurating essay and poster contests in the schools, publication of articles in local newspapers, programs on local radio stations, etc. Cancer symposia were sponsored by committees in several cities in order to disseminate cancer in-

formation to the public and to stimulate general interest in the subject.

#### EARLIER EVALUATIONS

Various evaluations of the Massachusetts Cancer Program have been made. These studies involved the analysis of a large amount of data, principally obtained from the cancer clinics. The earlier attempts to evaluate the educational phase of the program by the survey method consisted of sampling the population on a large scale in a few communities. Because of the size of the samples it was necessary to limit the number of such studies.

#### THE SMALL SAMPLE SURVEY

Since it was desirable to sample many communities throughout the entire state it seemed advisable to experiment with samples of various sizes in the hope that equally satisfactory results might be obtained with a smaller number of records. Ten years ago Dr. George Gallup, Director of the American Institute of Public Opinion, inaugurated the public opinion poll by which he obtained the views on various subjects of small samples of the population. Among these questions were several which sought to determine to what extent the medical profession and health authorities had been successful in their campaign to educate the people concerning cancer. Inasmuch as Gallup's small sample results were similar to the large sample results in Massachusetts, further experiments with small samples seemed warranted.

The information desired was an index of cancer knowledge in the various communities in Massachusetts, and the studies of samples of various sizes were based on questions designed to elicit the desired information. Five questions concerning cancer were used as a criterion:

1. Do you think that cancer can be cured?
2. Do you think that cancer is contagious?

3. Do you think that pain is an early symptom of cancer?

4. Do you think that germs cause cancer?

5. Do you believe that long-continued irritation causes cancer?

#### SAMPLING TECHNIQUE

After many experiments the following sampling technique was perfected. The map of a given city was subdivided into numerous sections. Cities with adult populations of from 10,000 to 50,000 were divided into fifty to sixty sections. The number of sections was increased in large cities. With the necessity of adjustments, described later, it seemed unwise to work with a sample of less than 500 records, and although the smallest city surveyed to date had over 10,000 adults, if in the future smaller communities are surveyed the sample will be not less than 500. This figure was determined after experimenting with samples of different sizes from one community. Here 1,790 individuals were sampled and averages computed on the basis of the first 100, 200, etc. The results indicate that the standard errors become so large in the smaller samples that it would be unwise to use samples of less than 500 when adjustments have to be made. As small differences between cities are of no particular importance in cancer control, a sample of this size seems adequate. If, however, one desired to measure very small differences between cities, larger samples would be necessary.

TABLE 1

*Average Number of Questions Answered Correctly in Different Sized Samples from the Same City*

<i>Size of Sample</i>	<i>Average Number of Questions Answered Correctly</i>
First 100	2.75 ± .15
" 200	2.69 ± .10
" 300	2.77 ± .08
" 400	2.83 ± .07
" 500	2.85 ± .06
" 600	2.81 ± .06
" 900	2.76 ± .05
1790	2.83 ± .03

TABLE 2

*Average Number of Questions Answered Correctly, by Broad Age Groups, and Adjusted Averages\**

	Size of Sample	Adult Population of Cities in Thousands	Young 21-44 Years	Middle aged 45-64 Years	Old 65+ Years	Adjusted Averages
City A	556	11	3.26 $\pm$ .09	3.25 $\pm$ .09	2.69 $\pm$ .11	3.22 $\pm$ .05
City B	910	104	3.25 $\pm$ .06	3.05 $\pm$ .07	2.52 $\pm$ .09	3.13 $\pm$ .04
City C	670	33	3.17 $\pm$ .08	3.00 $\pm$ .08	2.58 $\pm$ .10	3.05 $\pm$ .05
City D	600	39	2.92 $\pm$ .08	2.69 $\pm$ .09	2.40 $\pm$ .12	2.78 $\pm$ .05
City E	530	15	2.77 $\pm$ .10	2.48 $\pm$ .11	2.14 $\pm$ .11	2.58 $\pm$ .06

\* The standard deviation of the mean was computed employing a weighted standard deviation. The weighted standard deviations of the adjusted averages were formed by taking the square root of the sum of the weighted standard deviations squared, of each of the age groups, using the same weights as were used in forming the adjusted averages.

In each of the aforementioned sections ten houses were selected and one adult in each house was interviewed. An effort was made to make these samples as representative of each section as possible, but a certain amount of bias would be inevitable. For example, return visits were not made when the first call at a house was not productive; and when there was a response, the questions were asked of whichever adult came to the door. This method of sampling from a practical point of view was rapid and reasonably inexpensive. The average surveyor could complete thirty schedules a day, while the expert surveyor could average forty. The schedules included, in addition to the questions regarding the individual's knowledge of cancer, additional items regarding the source of this knowledge, his or her age, sex, and economic status, and knowledge of local and state cancer control measures.

The schedules were sorted into age and sex groups. For the purposes of this study it was felt that three broad age groups would be sufficient—the young adults 21-44 years of age, the middle-aged from 45 to 64 years, and the elderly 65 years and over. The average number of questions answered correctly was computed for each group, together with the standard error of the mean. These averages were weighted according to the percentage of the total

population in each group in the city under consideration. These will be designated as adjusted averages. The method used was identical with that employed in obtaining an adjusted rate, with the exception that specific averages rather than specific rates were used. The combination of small samples from multiple sections of the city, together with adjustments for items known to show bias, furnished what is believed to be a fair estimate of cancer knowledge in an individual city. The earlier surveys demonstrated that the relative knowledge of cancer was not affected by the sex or economic status of the individuals interviewed, and in the later surveys adjustments based on these variables were omitted, limiting the adjustment to age.

#### FIVE CITIES SURVEYED

These five cities fall into two groups, A,B,C, and D,E. The difference between the two groups demonstrated by the adjusted averages, is what would be expected based on a knowledge of the amount of cancer activities which have been conducted in these communities.

#### SOURCES OF INFORMATION

In an effort to determine the value of the various cancer educational media each individual was asked about the sources of his information. All schedules were sorted into six groups

TABLE 3

*Regression of Percentages of Sources of Information on Measurement Units of Knowledge*

<i>No. of Questions Answered Correctly</i>	<i>Authoritative Word</i>	<i>Reading</i>	<i>Close Contact</i>	<i>Hearsay</i>
0	1.6	12.8	6.5	43.8
1	3.0	23.5	18.2	42.9
2	5.1	37.7	23.1	35.8
3	5.6	44.1	24.3	36.7
4	9.6	53.9	26.7	31.1
5	13.0	60.2	22.2	28.3
Regression percentages *	49.4	34.5	17.7	— 8.5

\* These are logarithmic regressions. The arithmetic regressions were computed also, with similar results.

indicating the degrees of knowledge—those answering five questions correctly, four, three, two, one, and none. Each of these groups was subsorted according to the source of information, and rates were computed.

Table 3 shows the rates for various sources of information in each of the six measurement units of knowledge. The regression of these percentages on the number of questions answered correctly shows that the authoritative word, which includes radio addresses, lectures, and information received from physicians, increased more rapidly than did reading, which includes books, magazines, pamphlets, and newspapers. On the other hand, a much larger percentage of the population was influenced by reading than by the authoritative word. In these five cities 43.4 per cent of the population cited reading as a source of their information, whereas only 7.0 per cent cited the authoritative word. In a previous study, with fewer statistical refinements, reading was found to be of greater value than any other source of information. This is still true if the number of people affected are the criterion of judgment, but if educational methods could make the listeners equal to the number of readers the authoritative word would be a superior medium.

One of the surprising findings in the surveys was that only eight individuals mentioned visual devices as a source of information. Movies, posters and exhibits were listed in this category. In

one city where a cancer movie had been shown on many occasions only two individuals out of a total of 530 mentioned this source of information. In another city where a school program had been in operation in the eighth grade for two years, only a small percentage of the sampled population knew of its existence. This indicates the need for a rounded program of education, rather than concentration of effort along one line, if tangible results are to be obtained from cancer educational activities.

## CONCLUSIONS

1. The house-to-house survey, utilizing a sample of 500, is a satisfactory method of securing an index of cancer knowledge in the average community, although it is probable that a larger sample would be essential in very large cities.

2. The most important media for the dissemination of information on cancer were: lectures, radio addresses, discussions with physicians, and literature.

NOTE: Acknowledgment is made to Dr. Carl R. Doering and Dr. Herbert L. Lombard for reading this paper and offering suggestions in regard to it; but this statement should not be taken as transferring to them any responsibility for the correctness of the material or the results. Recognition is also due the surveyors and those members of the staff of the Division of Cancer and Other Chronic Diseases who have rendered assistance.

## REFERENCES

Gallup, George. Survey Shows Progress and Need

in Education. *National Bulletin of the American Society for the Control of Cancer*, 22:5 (May), 1940.

Guernsey, Paul D. The Modern Public Opinion Poll: A Means of Defining and Appraising Community Health Education Problems. *A.J.P.H.*, 32:9 (Sept.), 1942.

Lomhard, Herhert L., Tully, Mildred R., and Potter, Evelyn A. Evaluation of the Cancer Educational Program in Massachusetts. *Human Biol.*, 16:2 (May), 1944.

Massachusetts Department of Public Health *Annual Reports*.

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## Socio-economic Status of Nurses

Nursing shortages arising during the war and still continuing and national plans for expanded health facilities requiring increasing numbers of nurses furnish the impetus for a study of the socio-economic status of nurses. The study is being undertaken by the U. S. Bureau of Labor Statistics at the request of the Planning Committee of the National Nursing Council, a coördinating agency that includes the national nursing and other organizations directly interested in nursing problems.

Questionnaires will be sent to a large representative sampling of nurses in all parts of the country and in all types of nursing. Questions on salaries, hours, working conditions, and job attitudes will be included. In addition, personnel interviews will be held with a smaller sampling of nurses to pursue such problems as why nurses leave the

profession for other fields and the reasons for the extensive job turnover within the profession.

In announcing the study, Margaret Reid, Chairman of the Planning Committee explained that the Council turned to the Bureau of Labor Statistics as an impartial, fact finding agency with experience in such programs and trained personnel throughout the country. The nursing profession itself, however, will assume responsibility for establishing professional standards based on the findings. Said Miss Reid, "Each nurse who receives a questionnaire has a serious responsibility to answer promptly and fully, for her report on her own experiences will represent a number of nurses beside herself. It is significant that in this instance the nurse herself, rather than her employer or the public, is being asked how she feels about her work."

# Contributions of War Experience to Our Knowledge of Mental Hygiene

GEORGE S. STEVENSON, M.D.

*Medical Director, The National Committee for Mental Hygiene, Inc.,  
New York, N. Y.*

IT is perhaps too early to record all the changes in mental hygiene wrought by the war. Some we know are still in process, others we suspect are too subtle to have yet been sensed. Many of the things that have been talked about were civilian processes turned for the first time to use in the armed forces. The war at least dramatized them. Some of these were further developed. Perhaps this is as far as one dare go in a field whose growth is evolutionary. Four years is a short time to create, validate, and establish new processes.

Introduction into the armed forces is somewhat akin to transplantation of a person into a different culture. The situation is different, the position of authority is different, and the cultural supports that one unconsciously has come to depend upon in his home community are suddenly removed. As a result strange things happen, bewildering to the person and to those about him. The very presence of alterations of behavior as persons pass from civilian life to our armed forces brings us face to face with the fact that for lack of perspective we have ignored or taken for granted forces in the community that have high potential. If these were described and studied, perhaps we could use them.

Possibly the most significant advance could be labeled "increased recognition for psychiatry and mental hygiene."

In the armed forces this appeared on the technical side and has been supported by corresponding administration changes. There was the effort expended by Selective Service to secure the history of registrants so that the induction examinations could be more accurate. This had its counterpart in the response of thousands of volunteers as medical field agents before this medical survey could be carried out. There was the approval of the Bureau of the Budget necessary to the use of record and forms. There was the corresponding official direction and organization and supervision in the induction station that made use of this history. It was something new and experimental to secure history on a nation-wide basis, and it proved practicable even if as yet imperfect. If we need to do this again for military or civilian purposes we shall not need to start from scratch.

Further evidencing this recognition was the demand made upon psychiatry by other branches of medicine, by those in charge of military prisoners, by military courts, in discipline, in training centers, and in other non-medical military functions. These were chiefly applications of peacetime knowledge and organization in a new location, but the new location engendered changes that have potential civilian value. With the authority fully at hand, experimentation with offenders was easier. Psychiatric examining was facilitated and

the allocation of prisoners to rehabilitation units was easy. As a result many were saved the disgrace and discomfort of dishonorable discharge and imprisonment and were restored to status and finally discharged with honor. The country was saved much man power and many resentful and revengeful men. We learned some new techniques, but, more important, we created evidence in support of their use.

Psychiatry was given a fair hand in doing its job with psychoses, considering that its greatest limitations were the aim of diagnoses rather than treatment and the shortage of psychiatric personnel. The frequency of convulsive attacks in brain injured cases offers a warning to those who would invade that organ that they should proceed with humility.

Perhaps it was in the handling of the neuroses that psychiatry secured its greatest recognition and opportunity to work close to the rest of medicine. Many cases heretofore considered entirely organic or surgical were seen to have a psychiatric component and were handled jointly, or else became the primary responsibility of psychiatry, as the personal and situational element in the etiology appeared large. Gastric ulcer was a case in point.

The war has given us an unusual opportunity to study and evaluate the psychological significance of medical problems that have long been dealt with as though they had no special psychological significance. It has come to be recognized, for example, that a severe illness or injury such as a fracture may have the same psychological value in the adjustment of a person as does a hysterical paralysis. As a result it is found that the man brought in from line of combat with often very severe injuries is astonishingly calm, and only when the reparative processes restore him to normal functioning does the anxiety that one might have expected

to appear as a result of his experience come to evidence. This same anxiety appears as a patient with a hysterical disorder loses his hysterical symptom, amnesia, paralysis, and the like.

As a result of the intimate working relation between general medicine and surgery and psychiatry during the war, certain new steps have been taken looking toward the strengthening of the general physician for meeting the psychiatric problems which he inevitably faces.

West Virginia, under the encouragement of an army psychiatrist, has undertaken to carry on a training institute for its general practitioners; and in Minnesota a two weeks institute was held as a formal part of the post-graduate training program at the University of Minnesota in April, 1946. This latter is an outgrowth of a conference held in Hershey, Pa., early in 1945, between psychiatrists and internists, at which steps were planned to strengthen the hand of the general physician in dealing with veterans who will come to him with psychiatric disorders. Also a number of medical schools are considering the revamping of their psychiatric teaching programs in order that they may serve this same value.

It is recognized that the physician must inevitably meet anxiety in his patients and that his handling of this anxiety may be either to the patient's benefit or otherwise. It is recognized also that the physician must inevitably interview or talk with patients and that psychiatry which has given special attention to the dynamics of interviewing has something to offer at this point.

A retrospective study of many patients who broke down psychiatrically within the armed forces revealed the fact that their disorders began prior to enlistment, but were so unobtrusive as to demand no special attention. This experience has clarified the identity of subclinical illnesses in the psychiatric

field comparable to that existent in other medical fields.

Most cases of neuroses were recognized as aggravations of civilian disorders and were differentiated with perhaps some uncertainty on the borderline from essentially military neuroses engendered by conditions not found in civilian life. A study of breakdowns has also shown that there is a close relationship between breakdown and morale, and it has tended to elucidate the factors that enter into the production of low morale. In the effort to raise morale in the armed forces no small amount of attention has been given to the development of the feeling of hate toward the enemy. The British Army, however, has come to be somewhat skeptical about the strength of morale that is engendered by the artificial creation of the feeling of hate, since it is apt to be attended with seriously mixed feelings.

The importance of prompt, intensive treatment close to the site of origin, of avoiding hospitalization, and the dangers of reexposure were not new but had also previously not been so well tested. New adjuncts of therapy, hypnosis, narcosis as a treatment, narcosis as an adjunct to psychotherapy, psychotherapy in groups by a variety of techniques, have had their measure taken and value clarified.

Outpatient psychiatry in the war was initially an application of well validated peacetime patterns, but it came upon new conditions, saw the need for new departures, and conquered the obstacles. It found that psychiatric social work in the armed forces was not only unknown, but unwelcome in spite of the existence of some 250 social case work personnel already in service. It found many of these social workers, brought them into social work function under various pretexts and names, whereby their works sold themselves. It secured for them a formal recognition as an essential job

within the military framework, and at least in part a place of officer status. Many, however, were finally discharged as enlisted men who had rejected officer status which would have drawn them outside their own field.

Outpatient psychiatry also discovered that if it had something of scientific validity to offer it could make constructive use of a half-hour if that was all the time available, without degenerating to the slap on the back and exhortation to "be calm," "don't worry," "keep the chin up," etc. It has been found that the successful handling of a minute problem of today is of deep value to a patient in strengthening him with respect to his quandaries of yesterday and his prospects of tomorrow, even if the past and future are never touched upon in his contact with a psychiatrist.

Outpatient psychiatry is better prepared for the future to be of value. Being in the armed services, it had to do its best with all comers (all who were sent) and it had to write into the equation the job, the training, the social evulsion, and all other evident factors. It can use that experience to great advantage hereafter.

The counterpart of all this on the administrative side was found in the appointment of psychiatric chiefs of high rank in the three services—a Brigadier General in the Army. Consultants were supplied to each Service Command and theaters (colonels). There were training centers designed to prepare young doctors to practise military psychiatry. The courses were short but they were seriously conceived and carefully designed, and more men came under well designed training than has been the case in the past in so short a time. They lacked experience with problems of aging and the psychiatric problems of women, but they are on their way to a well founded professional career and know the difference between



training and cheap labor. The needs of veterans have forced the Veterans Administration to take up the task of training with the longer, more permanent view and the Veterans Administration is apparently on its way to leaven the field of psychiatric education. This activity for the Veterans Administration is especially significant for if it establishes sound working relationships with civilian psychiatry, it has adopted a pattern of partnership with community services which it may follow in the conduct of its work, whether medical or otherwise.

The war has offered many tests to our civilian psychiatric institutions because of the shortage of personnel and other facilities. The utilization of conscientious objectors as attendants in these hospitals has shown how good a job can be done if attendant personnel of high caliber is used. The use of conscientious objectors has also revealed to us in a way that no survey or administrative investigation could, how serious has been the mishandling of patients in many hospitals. As a result of this, one state, Ohio, is completely reorganizing its state program.

In meeting problems of selection, diagnosis, allocation, and training of personnel, scientists experienced in psychological training have devised methods that have done much to guide the effective application of psychiatric effort. In addition this work has done much to enhance mental health in other departments of military organization quite apart from psychiatric and other medical services. Moving pictures and other visual aids have been especially developed as educational instruments. With a greater amount of money available for this sort of thing, the war has

taught us much about what can be done.

Not only in the armed services, but also in civilian life the conservation and full utilization of man power has been highly developed. The handicapped accumulated on the civilian side and all civilian employers stretched themselves to make maximum use of formerly out-cast personnel. They proceeded on a man to man basis in this and not as a charity. They found that, intelligently employed, the handicapped gave adequate measure of return. They found in fact that the peculiar sensitivities of the psychoneurotic properly placed could be turned to positive advantage.

Especially sobering and psychiatrically revealing has been our experience with the populace of an authoritarian country. It has been frequently observed in reports that it is practically impossible to arouse any sense of guilt in the common man for the atrocities committed by his government. We go on the principle that in a democracy, government is the people and people must have a conscience about government and guilt about its wrongs. It is an ideal which we strive to approach, but which we expect in 1946 will be only imperfectly realized. Yet those of us who are in health and welfare fields are keenly aware of the shortcomings of conscience and the absence of guilt for the neglect of human beings in our society. It reveals how hard we must work to move toward our democratic goal and avoid that abandonment of conscience that signalizes its opposite. It reveals also that those dealing in the public health, who see the bandy legs of our disrobed culture, are in a position as well to be statesmen—social orthopedists if you will.

# Treatment of *Pediculus capitis* in School Children with DDT Powder

ALBERT D. KAISER, M.D., F.A.P.H.A.

*Health Officer, Rochester, N. Y.*

**P**EDICULUS CAPITIS is a common complaint among school children. It is not only an annoying condition to those infected and a menace to children whose home conditions are good, but it is responsible for many days of absenteeism from school. In the Rochester schools during the 1944 and 1945 session it was the second greatest cause of absenteeism.

The louse deposits its eggs firmly fastened to the hair. The incubation period of the egg is 7 to 10 days. Then follow three larval molts before maturity, with no pupal stage. The complete developmental cycle is 16 days, and the average life of a louse is 1 month. The larvae must have food frequently to survive. They live chiefly on human blood. If well fed, the louse can live for 10 days without food while separated from its host.

The head louse is the bane of the school nurse. It is spread by direct contact from child to child or from an adult to a child. The head louse is eliminated easily. The usual methods employed are successful in killing the head louse if thoroughly applied, but frequently the treatment is not completed and recurrences are common. Children have been excluded from school until the pediculi have been removed and until no nits or eggs are detected in the hair. In many instances the children were readmitted to the school apparently free from pediculi but in a few weeks the same condition of infestation was evident. This was

usually due to reinfection from a home contact or from the hatching of undetected eggs.

To simplify the treatment and control the source of contact, a preparation of DDT powder (10 parts DDT and 90 parts inert powdered talc) was utilized. Head inspections were made by the school nurse on all children in a grade and the infected child was treated by the school nurse. Utilizing a small atomizer, the DDT powder was sprayed on the child's hair, a paper towel being placed over the eyes to prevent any irritation. A towel or kerchief was placed over the scalp to prevent the loss of the powder and to hold the lice that came to the surface and the child was sent home with instructions to keep the head covered until bedtime. In the morning the hair was combed with a fine comb to remove the dead lice and as many eggs as possible.

The child is permitted to return to school the next day following an inspection by the nurse. Even if the nits are not all combed out, the child remains in school and receives daily inspections until the 7th day, when another application of DDT powder is made, following a shampoo given the previous evening. At the end of the second week another inspection follows. If any nits are detected, a third application of DDT powder is made. Frequently this third application is unnecessary.

In the meantime the nurse has visited

the home to inspect all other members of the family. If any member, child or adult, is found to harbor pediculi the same treatment is advocated for the individual not attending school. The nurse will give one demonstration treatment in the home with instructions how to proceed for follow-up care. In no case does the nurse apply DDT powder without the written consent of the parent.

The results have been most satisfactory. In all cases treated, the live pediculi have been promptly killed, usually within 2 hours. The removal of the nits has been thorough in many instances but incomplete in others. Thus far the treated cases have shown no recurrences within 4 weeks, which would seem to indicate that the repeated treatments have been effective in either destroying the eggs or in retarding their developmental cycle.

Subsequently a few children have been reinfected but in all such instances they experienced a fresh exposure usually from an untreated case in the home. A marked diminution in the number of children with live pediculi has been noted in the schools where this method has been employed. The number of days of absenteeism has been

reduced to an average of one day per child.

There have been no ill effects of any kind thus far and the treatment has evoked no resistance on the part of the children or adults so treated. In some instances parents have refused the treatment with the fear that DDT is dangerous. Ultimately this fear may be overcome but at present no pressure is used to force this method of treatment on any individual.

Thus far 350 children have been treated. None of the children developed recurrences of live pediculi within a 4 weeks period. Twelve children were later found to have live pediculi but their infection was from an untreated source in the home.

The experiences of the nurses are uniformly the same. They all testify that the method is easy and requires less effort than the use of larkspur or kerosene. The coöperation of the children and most of the parents has been readily obtained for the results are quick and certain. A routine procedure has now been established in all of the Rochester schools. It is felt that the incidence of *pediculus capitis* will be materially lessened if constant inspection and treatment are employed.

# Eight Years' Experience in the Licensing of Clinical Laboratory Technicians

MALCOLM H. MERRILL, M.D., F.A.P.H.A.

*Chief, Division of Laboratories, State Department of Public Health,  
Berkeley, Calif.*

A LAW requiring the licensing of clinical laboratory technicians was passed by the California legislature in 1937 and became operative on January 1, 1938. Licensing under its provision was initiated in May, 1939. Under this Act it is "unlawful for any person in a clinical laboratory to make any test or examination requiring the application of one or more of the fundamental sciences such as bacteriology, biochemistry, serology, and parasitology, unless said person possesses an unrevoked certificate issued by the State Board of Public Health as a qualified technician in the subject or subjects concerned with the test or examination." \* The law provided for the blanketing in of technicians who had been engaged in such work for three of the five years immediately preceding the effective date of the Act. It assigned to the State Board of Public Health the administration of the Act and the right to make rules and regulations necessary for its administration. It provided for the examination and certification of technicians in accordance with regulations of the board. Examination and certification fees were provided for and penalties for violation stated. It permitted the issuance of temporary

licenses and provided for revocation of licenses for cause. Licenses are automatically revoked by failure to pay the annual fee of one dollar within sixty days after January 1. It made possible the employment of apprentice technicians but limited the number to one apprentice in laboratories having one licensed technician and not more than two apprentices in laboratories having two or more. State and federal laboratories were exempt from the provisions of the law.

## THE BACKGROUND

In recognition of the importance of laboratory work to the health of the citizenry of the state, the State Board of Health as long ago as 1923 authorized the Director of the State Hygienic Laboratory to inaugurate a system of inspection and certification of diagnostic laboratories, both public and private. The first five years' experience in this program has been described by Kellogg.<sup>1</sup> A voluntary system of approval of laboratories and of examining and certifying clinical and public health laboratory technicians was adopted under the able guidance of Dr. W. H. Kellogg, who carried the work forward until his retirement in 1941. This voluntary system had become generally accepted by laboratory technicians throughout the state when the law was proposed. The law in effect thus

\* Quoted from the original act comprising Chapter 804, Statutes of 1937 which were codified in 1941 and added to Business and Professions Code, Division 2, Chapter 3, Section 1200 to 1305 inclusive.

legalized and made generally applicable a system of examination and certification that had already been operative on a voluntary basis for a considerable proportion of the laboratory technicians.

#### ADMINISTRATION

The responsibility for the administration of the act was delegated to the Division of Laboratories, the Chief of the Division being the administrative officer. In 1941 the Board of Health appointed two advisory committees of five members each to assist in the examination of candidates for licensure. The committees represent the two major metropolitan areas of the state. Members serve without pay.

Each committee is composed of two pathologists, one representative from a university, one laboratory director who is not a licensed physician, and one clinical laboratory technician. These committees meet four times a year, that is, preceding and following each of the two examinations. One full-time field representative and one clerk of the Division of Laboratories assist in the administration of the Act. The field representative visits laboratories, checking on personnel, techniques, and facilities, and assists in various phases of the program of examining and certifying technicians.

#### INITIATION OF CERTIFICATION

As indicated above, the State Division of Laboratories had been conducting examinations on a voluntary basis for several years before the law became operative. During this time examinations had been given in the individual subjects of bacteriology, serology, parasitology, and biochemistry including hematology. As candidates passed these subjects they were issued certificates of proficiency.

At the time the law became operative, technicians holding any three certificates were issued a complete

license as a clinical laboratory technician. Those holding two or fewer were issued licenses for the respective fields of activity for which they held certificates of proficiency, e.g., bacteriology, serology, etc. These latter licentiates were permitted to take examinations in the deficient subject or subjects upon successful completion of which they were granted comprehensive certificates. Examinations in individual subjects were continued until August, 1943. Since that time all candidates have been required to take the complete examination covering the fields of bacteriology, serology, parasitology, biochemistry, and hematology.

Those who had no certificates of proficiency at the time the law became operative and who had been engaged in performing tests in a clinical laboratory for three years within the preceding five years, one year of which was in California, were, upon application, granted "limited certificates" for the type of work they had been actually doing. The certificates listed the procedures covered by their licenses.

It is thus seen that there was an actual blanketing in of all technicians who had been previously engaged for a minimum of three years in clinical laboratory work. However, comprehensive certificates were issued only to candidates who had successfully passed the required examinations.

#### QUALIFICATIONS FOR ADMISSION TO EXAMINATIONS

The law as initially passed made no formal educational requirements for admission to the examinations. These were established by regulation of the State Board of Public Health as three years of apprenticeship training in a laboratory providing diversified experience, or a college degree with a major in bacteriology or biochemistry, or essential equivalent, plus one year of experience. In August, 1945, these

qualifications were amended to require completion of a four year college curriculum in clinical laboratory technique or a four year college course with major in bacteriology, biochemistry, or essential equivalent plus one year of appren-

cent, were issued following examinations in individual subjects.

#### CERTIFICATES ISSUED

The total licensees to December 31, 1945, are shown in Table 1. These are

TABLE 1

*Limited and Clinical Laboratory Technicians' Licenses  
Issued January 1, 1938, to December 31, 1945, by Sex*

Type of License	Male		Female		Total
	Number	Per cent	Number	Per cent	
Limited (Without Examination)	82	21.0	309	79.0	391
Clinical Laboratory Technician Initially Licensed (Examination prior to 1939)	42	20.0	168	80.0	210
Clinical Laboratory Technician Subsequently Licensed (Examination under the 1939 Law)	135	11.7	1,016	88.3	1,151
Total	259	14.8	1,493	85.2	1,752

ticeship training or five years of apprenticeship training. In the latter case university work in the fundamental sciences may be substituted in the ratio of 30 semester hours for each year of experience.

Under these amended regulations it will be noted that a license can be acquired in four years after graduation from high school by completion of a college curriculum in this field.\*

#### EXAMINATION PROCEDURE

The examinations have all been of the objective true-false, multiple-choice type. They have been distributed among the four subjects of bacteriology, serology, parasitology, and biochemistry including hematology, twice as many questions being given in biochemistry as in each of the other three subjects. As indicated above, candidates were permitted to take examinations in individual subjects until August, 1943. Of the 1,361 comprehensive licenses issued to December 31, 1945, 432, or 32 per

cent, were issued following examinations in individual subjects. analyzed by sex to show the number issued limited licenses, under the blanketing-in provisions of the law, the number initially licensed through examinations taken prior to 1939, and the number licensed by examination since May, 1939. Of 1,752 certificates issued, 259, or 15 per cent, were to men and 1,493, or 85 per cent, to women. There has been a marked decrease in the proportion of men since 1939. In 1944 only 7 per cent of licenses were issued to men. This increased to 10 per cent in 1945.

#### AGE DISTRIBUTION OF LICENTIATES

Table 2 shows the age distribution of 1,353 licentiates who received their full clinical laboratory technician licenses, showing those initially and subsequently licensed. Thirty per cent of those initially as contrasted with 44 per cent of those subsequently licensed were in the 20 to 24 age group. Forty-two per cent of all licentiates were less than 25 years old when licensed. In general, men were slightly older than women. In the group subsequently licensed the mean age for men was 29 years, for

\* Such a curriculum is now offered by the University of California, University of Southern California, and the College of Medical Evangelists

TABLE 2

*Age at Time of Licensing of 1,353 Clinical Laboratory Technicians Licensed  
May 1, 1939–December 31, 1945*

Age When Licensed	Initially Licensed		Subsequently Licensed		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Under 20 years	..	....	1	0.1	1	0.1
20–24 "	61	29.6	504	43.9	565	41.8
25–29 "	61	29.6	297	25.9	358	26.4
30–34 "	39	18.9	156	13.6	195	14.4
35–39 "	28	13.6	103	9.0	131	9.7
40 years and over	17	8.3	86	7.5	103	7.6
Total	206	100.0	1,147	100.0	1,353	100.0

women 27; the respective medians were 27 and 25.

and payment of the current year's fee.

#### LICENSES BECOMING INACTIVE SINCE 1938

The law provides that failure to pay the annual license fee within 60 days after the beginning of the year shall automatically cancel any license. However, by regulation of the Board of Health, reinstatement is possible by payment of a fine plus lapsed fees. Of the 1,361 licenses issued, 1,109, or 82 per cent, were still active in 1945. Of the 210 licenses initially issued, 119, or 57 per cent, were still active. The lapse of licenses was significantly greater among men than women. Only 112, or 63 per cent, of 177 licenses issued to men, while 997, or 84 per cent, of 1,184 issued to women, were in effect in 1945. The war may be largely responsible for this difference, as fees were waived during military service and reinstatement is automatic upon return to civilian life

#### EDUCATIONAL BACKGROUND OF LICENTIATES

The basic educational qualifications of the 1,361 licentiates at the time the licenses were issued and year of licensing are shown in Table 3. At the time the licenses were issued 69 per cent had a college degree or more and 86 per cent had at least two years of college work. Only 8 per cent had no college credits.

Until 1941 there was a progressive increase in the proportion of licentiates with college degrees, reaching 78 per cent in 1941. In 1942, however, there was a significant recession in this proportion with gradual recovery since that time. Several factors may have played a part in these changes. First, there has been a definite migration into California of out-of-state technicians who qualify for admission to examination on the basis of experience; second,

TABLE 3

*Extent of College Work of 1,361 Clinical Laboratory Technicians Licensed Each Year,  
1939–1945*

Year Licensed	Total Licensed	A.B., B.S., or More		3 Years College		2 Years College		1 Year College		No College	
		No.	%	No.	%	No.	%	No.	%	No.	%
1939	330	223	67.6	39	11.8	26	7.9	11	3.3	31	9.4
1940	207	148	71.5	20	9.7	12	5.8	10	4.8	17	8.2
1941	166	129	77.8	10	6.0	10	6.0	5	3.0	12	7.2
1942	139	87	62.7	12	8.6	16	11.5	12	8.6	12	8.6
1943	181	120	66.3	20	11.0	12	6.6	13	7.2	16	8.9
1944	153	104	68.0	7	4.6	17	11.1	18	11.7	7	4.6
1945	185	130	70.3	16	8.6	14	7.6	7	3.8	18	9.7
Total	1,361	941	69.1	124	9.1	107	7.9	76	5.6	113	8.3

TABLE 4

*Years of Laboratory Experience of 1,319 Clinical Laboratory Technicians at Time Licensed, Each Year, 1939-1945*

Year Licensed	Total Licensed	1 Year		2 Years		3 and 4 Years		5 or More Years	
		No.	%	No.	%	No.	%	No.	%
1939	319	56	17.6	25	7.8	82	25.7	156	48.9
1940	193	14	7.2	15	7.8	69	35.8	95	49.2
1941	161	10	6.2	30	18.6	60	37.3	61	37.9
1942	134	16	11.9	34	25.4	27	20.2	57	42.5
1943	175	47	26.8	29	16.6	29	16.6	70	40.0
1944	153	43	28.1	21	13.7	43	28.1	46	30.1
1945	184	59	32.1	24	13.0	42	22.8	59	32.1
Total	1,319	245	18.6	178	13.5	352	26.7	544	41.2

there has been some relaxation in the stringency of examinations to meet the wartime shortage of technician personnel; third, there has been a decrease in the number of graduates in this field from universities in California. Along with the decrease in educational qualifications there has been an actual decrease in the number of licenses issued during the war years.

#### LABORATORY EXPERIENCE OF LICENTIATES

Since it is still possible to become a licensed technician in California by way of apprenticeship training, it is of interest to note the experience history of licentiates at the time licenses were issued. The number of years of experience in laboratory work is shown in Table 4. Nineteen per cent of 1,319 licentiates had only one year of experience; another 14 per cent had two

years. The per cent having the minimum of one year has increased progressively from 6 to 32 per cent since 1941. Fifty-nine per cent of the licentiates had less than 5 years of laboratory experience. Women in general had less experience than men. This would be expected since a larger percentage of women had formal university training.

#### NATURE OF COLLEGIATE TRAINING

It has already been noted that 69 per cent of licentiates had college degrees at the time of admission to the examination. Table 5 shows the college majors reported on the application forms of the candidates. Eight per cent of 925 college graduates had collegiate training specifically designed for the professional work for which they were being licensed. However, students with major work in bacteriology, public health, and biochemistry had specific training in

TABLE 5

*College Major of 925 College Graduates Licensed as Clinical Laboratory Technicians, 1939-1945*

College Major	Male		Female		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Bacteriology	35	40.3	296	35.3	331	35.8
Chemistry	6	6.9	83	9.9	89	9.6
Public Health	5	5.7	83	9.9	88	9.5
Biology	6	6.9	70	8.3	76	8.2
Medical Technology	..	....	74	8.8	74	8.0
Zoology	12	13.8	56	6.7	68	7.4
Medicine	6	6.9	34	4.1	40	4.3
General Science	3	3.4	32	3.8	35	3.8
Biochemistry	4	4.6	29	3.5	33	3.6
Other	10	11.5	81	9.7	91	9.8
Total	87	100.0	838	100.0	925	100.0



TABLE 6

876 Clinical Laboratory Technicians Licensed  
1939-1945, Classified by Colleges  
Conferring Degrees

College or State	Number	Per cent
California	520	59.3
University of California	314	60.4
University of California at Los Angeles	63	12.1
Stanford University	49	9.4
University of Southern California	27	5.2
Other California Schools	67	12.9
Other States	356	39.1
Minnesota	57	6.5
Washington	29	3.3
Kansas	27	3.1
Colorado	22	2.5
New York	22	2.5
Montana	17	1.9
Michigan	13	1.5
Ohio	13	1.5
Wisconsin	13	1.5
Iowa	12	1.4
Oregon	11	1.3
Utah	11	1.3
Missouri	10	1.1
27 Other States	85	9.7
Other Countries	14	1.6
Total	876	100.0

clinical laboratory work and 59 per cent courses of study related in varying degrees.

## PLACE OF COLLEGIATE TRAINING

Table 6 shows the colleges from which degrees were obtained. Schools in California are specifically noted; otherwise only the name of the state or foreign country is given. Fifty-nine per cent of 876 licentiates were graduated from California schools, the University of California contributing 60 per cent of the state's total. Among others, the largest number was from Minnesota, the majority being from the University of Minnesota with major work in medical technology. Thirty-nine other states were represented and 14 candidates had their college work outside of the United States.

RELATION OF FORMAL TRAINING TO  
ABILITY TO PASS STATE LICENSING

## EXAMINATION

The licensing system in use has provided an opportunity to observe the effect of formal schooling upon ability to pass the written examination given by the State Health Department. The results of the last nine examinations are summarized in Table 7. Of all candidates admitted to the examination 76 per cent received a passing grade.

Here a comparison is made only of those candidates who did or did not have college degrees. No attempt is made to classify the college graduates by the nature of their college work. In

TABLE 7

Relation of College Training to Standing of Candidates in Licensing Examinations,  
December, 1941-December, 1945

Standing	College Degree		No College Degree		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Upper Third	225	44.9	69	17.0	324	33.3
Middle Third	201	35.5	123	30.2	324	33.3
Lower Third	111	19.6	215	52.8	326	33.4
Total	567	100.0	407	100.0	974	100.0
Passed	490	86.4	251	61.7	741	76.1
Failed	77	13.6	156	38.3	233	23.9

the non-graduate group are included individuals with varying amounts of college work. The upper part of the table shows the relative standing of the two groups in the examinations; the lower shows number and per cent that passed and failed. Of the 77 college graduates who failed to pass the examinations, only three had received college training primarily in the field of clinical laboratory technique. In other words, formal collegiate training in the general field of clinical laboratory work practically assured ability to pass the examination. Both from the standpoint of relative place in the examination and ability to pass the examination, the college trained candidates did much better than those with less formal training.

#### LIMITED LICENSES ISSUED

As already stated, the law provided for the blanketing in of technicians who had been engaged in laboratory work for three of the five years immediately preceding the effective date of the Act. Under this provision 391 "limited certificates" were issued permitting the technicians to continue doing only those procedures they had been carrying on prior to the adoption of the law. One-fourth of these certificates have since become inactive, and nearly one-fourth of the original licentiates have obtained the full clinical laboratory technician's license. Fifty-two per cent were still active in 1945. A tabulation of age at licensure shows that the average age of the group was 35 for males and 33 for females, compared with 29 for those technicians receiving comprehensive licenses. The median age is also somewhat higher in the limited than in the fully licensed group. Whereas 68 per cent of technicians who were licensed by way of examination to the end of 1939 (Table 3) had a college degree or more, only 23 per cent of 362 receiving limited licenses had a complete college

course. Only 42 per cent had two years or more of college as contrasted with 87 per cent of the technicians licensed by examination.

#### DISCUSSION

One fact stands out in this review of the California experience. This is the heterogeneity of the training of the candidates who enter the field of clinical laboratory technical work. While we train doctors to be doctors, nurses to be nurses, etc., we are still floundering in the field of training clinical laboratory technicians for their highly technical and exacting work. There is urgent need for a more realistic approach to this problem on the part of colleges and universities that are adequately staffed and equipped to provide training in this field. In the absence of such a realistic approach on the part of the major universities that have medical school affiliations, junior colleges and other institutions that are in no sense prepared to provide adequate training are attempting to fill in the gap. Furthermore, in California, commercial schools with poorly trained staffs and inadequate teaching facilities are offering courses of varying duration.

The California State Board of Health has for the past 20 years been aware of the public health significance of honest and dependable clinical laboratory work. Its experience indicates that order is gradually being achieved in this formerly chaotic professional field. The legislation is so designed that licensing requirements can be raised as rapidly as universities assume their responsibilities for providing adequately trained candidates. That universities in the state are facing this responsibility is indicated by the fact that three of the institutions with medical school facilities have now initiated curricula and a fourth is awaiting only the end of the war and return of an adequate teaching staff.

The program as developed has been generally accepted by the medical profession of the state as a notable contribution to the improvement of medical service. It is enthusiastically sponsored by the laboratory technicians. By retaining control under the State Department of Health with its staff of voluntary consultants representing the various interested groups, a uniform and constructive administrative policy can be maintained. The limited income from the fees of licentiates makes impracticable the establishment of a separate licensing agency or board for this work. It would seem that the State Laboratory is the logical agency to assume responsibility for this program.

A question that suggests itself from the experience to date is the annual need for clinical laboratory technicians. Prior to the end of 1941 it appeared that approximately 150 new licentiates might be required annually in order to keep established positions filled. No attempt appears yet to have been made to estimate technician need per unit of population. Excluding federal and state

laboratories, the pre-war need in California was approximately 1,000 technicians, or about one per 7,500 population. The additions that appear to be needed annually are approximately one per 50,000 population. This does not include laboratory work done by private physicians for their own patients. This must be considered a rough estimate presented as a beginning yard stick with which to measure needs.

Each year sees an expansion of the demand for clinical laboratory services as a vital aid to the physician in diagnosis and therapy. Any current estimate based on past experience would certainly be conservative. Since young women comprise the majority of this group, the turnover is bound to be rapid even in normal times. The problem has been met in other fields, such as nursing, by adjusting the training program to the needs. It is to be hoped that universities will develop programs to fill the needs in this important branch of medicine and public health.

#### REFERENCE

1. Kellogg, W. H. Certification of Laboratories. *California & West. Med.*, 30:3 (Mar.), 1939.

# The Penny Plan for Health Education in Industry

JAY I. BOXER

*Executive Director, Brooklyn Industrial Health Committee, Brooklyn, N. Y.*

MUCH has been written about the materials and methods of health education but not enough about financing such programs. True, the development of educational tools and techniques is important, but many a promising project has had to be abandoned because of a lack of funds.

In the relatively new field of industrial health, educational programs are slowly evolving and give every indication of assuming the proportions of a major area for health educational activities. Here too, financing is a problem which can wreck an otherwise sound and desirable public health work.

Some maintain that one of the criteria for evaluating a health educational program is the willingness of the public to support it. This may be true, but much more than just the *value* of a program is involved. A way must be found properly to "sell" the program to the public in order to gain financial support. Results from the voluntary health agency drives (well over \$50,000,000 in 1945) attest to the generosity of the American people. Most significantly, the agencies with the best "sales appeals" reaped the major portion of this harvest. The other voluntary health groups cannot help but envy, the agencies blessed with a "Christmas Seal Sale" or a "March of Dimes." These have proved two of the most successful devices for "selling" a health program to the public.

When the Fort Greene Industrial Health Committee,<sup>1</sup> now the Brooklyn

Industrial Health Committee, launched its educational program in February, 1944, it was proposed to obtain most of the budget on a voluntary contribution basis from firms participating in the project. Accordingly, firms were invited to contribute whatever amount they cared to make available for the promotion of the work. The end of the first fiscal year showed that industry contributed approximately 85 per cent of the income—the balance being contributed by a labor union and a few of the local voluntary health agencies. The close of the second year, which witnessed some dangerous financial sailing, showed that the project was far from pursuing a sound and permanent fiscal policy. Total receipts were 27 per cent less than the first year, and this time industry contributed only 57 per cent of the total, with a labor union and the local health agencies making up the balance. True, V-J Day and the resulting cutbacks in industry had their effects upon the project. But this merely confirmed the need for a careful analysis of the fund raising device and suggestions for necessary changes.

Undoubtedly, during the war, firms were liberal with their contributions to the committee since these were tax-deductible and originated from surplus profits resulting from government contracts on a cost-plus basis. The echo of the last shot ending the war, burst this bubble. Management had but one interest, reconversion to a peacetime economy as rapidly as possible. Down came

the fancy "win the war" posters and slogans. Appeals to patriotism could no longer be used as an incentive for increased production. Now it was every man for himself, every business, every union for itself. On the horizon loomed the struggle for increased prices, higher wages, raw materials, and markets. Picture if you can, the plight of the new health education project caught in this economic maelstrom.

Thus, faced with a "sink or swim" situation, inspired perhaps by the noble objectives so unfairly threatened, the Penny Plan for Health Education in Industry was born. Here was a way to "sell" a health education program to industry—to *sell*, literally and figuratively. This is the language of business. Don't ask for a "handout," don't *beg* for support of a program; offer something of genuine value and affix a price tag. Package the materials and services developed by the project and market them on a per capita basis.

The Penny Health Plan calls for the sale to industry at a cost of *one cent per employee per month* the following health educational materials and services available from the committee:

1. A subscription to *Industrial Health Bulletin*—a monthly newsletter to management reporting developments in industrial health

2. A group subscription to *Here's to Your Health*—a monthly health educational tabloid—a copy for each employee

3. Health educational posters—correlated with the tabloid—issued monthly or oftener—as many copies as needed in the plant

4. Leaflets—on various health topics, for employees

5. Guidance in the formation of in-plant health committees and programs—on request

6. Films and speakers on health subjects—on request.

7. Cooperation in securing chest x-rays, blood tests, nutrition advisory service, industrial physicians and nurses.

A plant may take any or all of the materials and services offered. The total cost to a plant of 500 workers would be \$5 per month or \$60 per

year. A minimum fee of \$1 per month or \$12 for the year is charged for plants having fewer than 100 workers. Naturally the success of such a plan is dependent upon the number of workers brought into the program. In the case of Brooklyn, it is planned to reach 100,000 workers whose employers would pay \$1,000 per month or \$12,000 per year for health education service.

Many variations of the Penny Health Plan suggest themselves. The original *penny per worker per month* plan whereby management meets the cost can, after the first year, be extended to include a like payment by the workers, thus yielding *two cents* per worker each month. Another possibility is the establishment of the service fee at the rate of a penny per worker per *week* with management alone or in coöperation with the workers paying the bill. The smallest possible fee was decided upon by the Brooklyn Committee to encourage small plants to come into the program and to rule out *cost* as a possible excuse for not participating.

But how can so much be given for so little? The answer lies in a novel form of subsidy which allows for voluntary health agency coöperation in the program with several mutual satisfactions. Approximately 40 per cent of the 1946 budget has been allocated for publication and distribution of the monthly tabloids and posters. Health agencies are approached and asked to sponsor or assume financial responsibility for the materials—a different agency sponsoring an issue each month. Since the sponsored issue is devoted to the subject matter identified with the sponsoring group, the agency has the opportunity to reach a ready-made audience of industrial workers with its message.

For example, the Brooklyn Cancer Committee was approached in October, 1945, to sponsor the December issue of the tabloid and poster. This agency

was most anxious to bring industry in contact with its educational program. The sponsorship also offered an excellent medium for establishing good public relations between industry and the Cancer Committee which was planning to reach more of the industrial group in its approaching fund raising campaign.

When the financial responsibilities were agreed upon, the sponsoring agency submitted to the Brooklyn Committee materials suitable for use in the tabloid and poster. When proof sheets met with the approval of all concerned, the required number were printed and distributed to the firms and organizations participating in the industrial health program. The workers coming in contact with these materials were given some basic information about cancer and referred directly to the Brooklyn Cancer Committee for further information and advice. The sponsoring group and its work was given the spotlight and full credit. The Brooklyn Industrial Health Committee remained in the background, assuming the rôle of vehicle, carrying the health message to industry.

Sponsors thus far have been the American Social Hygiene Association, the Brooklyn Tuberculosis and Health Association, the Brooklyn Cancer Committee, the New York Heart Association, the Greater New York Chapter of the National Foundation for Infantile Paralysis, the Maternity Center Division of the Brooklyn Visiting Nurse Association, the Sight Conservation Committee of the Brooklyn Association for Improving the Condition of the Poor, the Associated Hospital Service of New York, the Metropolitan Life Insurance Company and the First and Second District Dental Societies of New York.

The response from agencies invited to sponsor materials has been so gratifying that it is safe to predict that most

of the issues for the 1946 program will be underwritten.

Another subsidy, while not granted in the form of cash, is the rent-free quarters supplied in one of the New York City Department of Health buildings. In addition to office space, a conference room and an auditorium have been made available by the department. Other subsidies include grants from a labor union, a Foundation, the Brooklyn Tuberculosis and Health Association, and the Greater New York Fund. Additional labor unions and foundations will be approached for funds to help carry the project until it can sustain itself.

What does industry think of the Penny Health Plan? The answer to this question was boldly sought by presenting to industrial leaders a brief description of the plan with a request for their personal opinions. The response here too was most gratifying. Not a single adverse criticism was expressed. One must read these letters from "hard boiled" business men to appreciate their feelings toward the plan. The following excerpts reflect some of the enthusiasm:

"I think the plan is sound and I hope you will succeed in putting it over. We would support it."

"It does seem like an equitable method for distributing the cost. . . ."

"I believe it is an excellent idea and should be supported by any industry with a progressive and forward looking attitude regarding its employees' health."

"It sounds like a very good program, and I imagine you might have an opportunity to interest some small concerns in it when they would be hesitant to give a small donation."

"My immediate reaction from an employer's point of view was its bargain feature. Here was something that supplied more than its money's worth. Yet the fact that there was a small definite outlay was enough to bind the employer's interest in the plan. I am of the opinion that if the approach to an employer is made on a businesslike basis rather than a charity basis with its indefinite

contribution solicitation, he is apt to go along with a keener interest in the plan. The Penny Health Plan deserves a trial. I am for it."

"We are thoroughly in accord with the Penny Plan as outlined in your summary, and consider it an interesting and attractive way to present your program to industry."

"In our opinion your new Penny Plan is an excellent one and we believe it will be accepted by manufacturers. The idea of selling to management information for the use of their employees is a sound plan from a business standpoint, and is a much more businesslike method of financing the costs of the work done by the Fort Greene Industrial Health Committee.

"We feel also that by making this work self-sustaining it can be used effectively in other areas and in many other cities. We hope that it will some day be done on a nation-wide basis, and believe that the Penny Health Plan is the only satisfactory manner whereby such services would be acceptable to industry."

Further to insure the success of the plan it was decided to secure the endorsement of the Brooklyn Chamber of Commerce—not only of the plan but of the entire project. Accordingly, the chamber was approached and the committee subjected to a thorough investigation. The report and recommendations to the Executive Committee of the Brooklyn Chamber of Commerce submitted by the investigating group scored another point in favor of the plan. Extracts from this report tell their own story:

"In our opinion the management is sound. There is a justifiable need for the type of service rendered to management, and the organization, within the capacity of its present income and scope of interest, is attempting to do an effective job.

"It is now proposed by the sponsors and management of the Fort Greene Industrial Health Committee that these services be made available to other plants in Brooklyn outside the original area. They are of the opinion that the Fort Greene experiment has been sufficiently developed to assure the usefulness of the program and set up a technique fitted to the Brooklyn community.

"They propose to finance this expanded program through the so-called Penny Plan

whereby industry would purchase the health educational materials and services described earlier at a cost of one cent per employee per month.

"Your subcommittee has met with officials and representatives of the Fort Greene Committee for full discussion of all details herein reported, and we recommend that the Chamber of Commerce extend its coöperation. . . .

"We believe . . . that the Chamber of Commerce, through adoption of the plan of coöperation here recommended, could be of substantial and effective service to the health group in the expansion of its program on a Borough-wide basis."

The Penny Plan for Health Education in Industry was officially launched late in May when 1,800 firms in Brooklyn employing fifty or more workers were invited to participate. Funds had been made available to prepare an attractive, businesslike presentation to the management of these firms. This was a kit consisting of an eight page leaflet describing the purpose and nature of the project, actual samples of the materials available to participants, and an enrollment blank on a business reply card. These were arranged in a folder which was indexed for filing under the heading "Health, Industrial." It was hoped that the folder would lend an air of importance to the presentation and encourage further study of the proposition. The kit was mailed in a specially printed envelope bearing a distinctive and eye-arresting format.

As this is written, it is too early to predict results. However, there appears to be no reason why the Brooklyn experiment cannot be initiated in any community having a large industrial population. With a novel, sound, and acceptable "selling device" like the Penny Health Plan, financial support for such a project is more certain.

#### REFERENCE

1. Landes, J. H. Plan of the Fort Greene Industrial Health Committee. *A.J.P.H.*, 35:602 (June), 1945.

# Report on Hydrant Stops

L. GLEN SHIELDS, F.A.P.H.A., AND  
F. GARDNER LEGG, JR., F.A.P.H.A.

*Department of Buildings and Safety Engineering, City of Detroit, Mich.*

IN recent years, great progress has been made in the prevention and elimination of cross-connections and inter-connections in the water distribution system of buildings and premises. Vacuum breakers, atmospheric gaps, barometric loops, back flow preventers, surge tanks, and greater care in the adequate sizing of water services and distribution piping have been utilized in their proper locations to eliminate the possibility of back flow or back siphonage.

There is one possible source of pollution to which little attention has been given which, in the opinion of the Detroit Department of Buildings and Safety Engineering and the Department of Health, is dangerous and should be corrected.

Wherever climatic conditions develop freezing or lower than freezing temperatures over a protracted period of time, it is common practice in structures that have no basement or cellar, to install a shut-off valve in the water service piping below the frost level. This valve has a drain opening so the piping on the building side of the valve may be drained into the ground when the valve is in the closed position. The valve used in Detroit is a brass "Hydrant Stop, Cap Pattern, Flatway, with Tee Handle."

The rules and regulations of the Department of Water Supply of the City of Detroit provide:

*Chapter VI. Sec. 14.* "It is expressly forbidden for any plumber to lay a service pipe inside of a building, along the outside wall,

or in any position where there is danger of frost; also, to make new connections, or to install any new attachments or fixtures to old connections, that shall require a running stream to prevent freezing. Every service pipe, supplying a building where there is no basement, must be provided with a valve and waste, so situated that the water can be completely shut off and drained from the pipes to prevent freezing. When such valve with waste is placed under the sink, the rod for operating the valve shall extend above the floor, and be so arranged that when the valve is open, the handle of the rod shall be parallel to the back of the sink."

The Department of Health and the Department of Buildings and Safety Engineering of the City of Detroit devised a simple experiment in order to determine whether such an installation could introduce any polluted water into the distribution piping of the system. A description of the equipment and procedure follows.

A 5 gallon capacity metal tank, 18 inches in height, was pierced on one side so as to receive a  $\frac{3}{4}$  inch water supply pipe, and after the pipe was introduced, the opening in the wall of the tank around the pipe was sealed. The end of the pipe was threaded before its introduction into the tank and the hydrant stop with drain of the aforementioned type was connected to the supply pipe inside the tank. A  $\frac{3}{4}$  inch distribution line was connected to the discharge side of the hydrant stop and led by means of a vertical riser to a sink faucet 3 feet above the level of the stop. The waste opening in the hydrant stop was about 6 inches above the base of the tank and the diameter of the



waste opening was approximately 3/16 inch.

The water supply to the hydrant cock and sink faucet was turned on and the riser was filled with water. Water tinted red by means of fuchsin dye was poured into the tank until it reached a height of about 4 inches above the hydrant stop. The hydrant stop was turned off but the faucet on the riser remained closed. In 6 hours, the supply was restored to the faucet by turning the hydrant cock on and the first water drawn from the faucet was caught. It showed the presence of the dye, which had entered from the tank through the drain opening into the distribution piping by the process of diffusion. There was no perceptible change in the elevation of the water in the tank and it would appear that very little drainage in this instance had occurred.

The next procedure was to flush the supply riser and hydrant stop until there was no evidence of dye in the piping. The hydrant cock was again turned off, the faucet was open in this instance and permitted to stand overnight. The following morning, the hydrant stop was turned on, the first water flowing from the faucet was caught, and again the presence of the dye was apparent.

The final experiment was to flush the piping so as to clear the piping of any dye from the tank, the hydrant cock was closed, the faucet opened, and sufficient water was decanted from the tank by means of a siphon so as to lower its level one inch. This decanted water was immediately returned to the tank by gently pouring it into the tank so as to create as little disturbance as possible. The hydrant cock was again opened, the first water from the faucet was caught, and the presence of much dye was observed.

#### CONCLUSION

This experiment shows the hydrant

stop with drain to be a device by means of which the water distribution piping may be contaminated, providing the valve is shut off either when the ground water table is above the drain opening or if the ground water table rises above the drain opening while the valve is shut off.

Installations of this character if installed in sandy soil could permit sand to enter through the drain opening, and it is conceivable that if the valve is operated a channel could be cut in the wall of the valve body or the surface of the plug so that the installation would leak. It might even be possible under extreme conditions of usage for a high velocity flow through the hydrant stop to set up aspirating effects so as to pull ground water through the seat made defective by sand. The valve seat is lubricated and sealed with a heavy lubricating medium, which in the course of time might deteriorate or, if used with sufficient frequency, work out around the top so as to permit leakage at that point.

Thus, we believe this type of installation has too many possibilities and probabilities of polluting the water distribution system for it to be condoned by any agency responsible for furnishing water through safe service piping, meters, and distribution piping to the point of normal usage.

As an alternative safe method of installation, it has been suggested that a shutoff valve with a drain opening be installed in the service line on the utility side of the meter. This valve would be installed in a water-tight housing with a piping connection off the top in which would be installed the shut-off handle to the valve and a small tube leading to the bottom of the housing. The tubing would have a pump attachment and would be pumped out when the system drained.

Another suggested solution is for the hydrant cock to be installed with no drain opening, with a tee or wye con-

nection in a riser immediately adjacent to the discharge side of the valve and a tube with pump connection led to the low point in the piping, and the water pumped out of the system through the tube.

Solutions of this type raise objections because they place added responsibility and duties on the occupant of the premises and also if he fail in them, burst piping with its attendant evils might result. Furthermore, it raises the cost of installation to the extent of the difference between the present unsafe installation and one that would be safe.

Let us analyze the validity of such objections. We believe that it would be equally valid to object to installing an ash pit in conjunction with a coal furnace because the user is forced to shovel out the ashes from the pit or burn out the grates of the furnace. People can be taught to assume their responsibilities, particularly where their health or safety may be affected. As to the objection with reference to cost, if this were a valid objection, we would not be justified in placing locks on doors, fire escapes on buildings, or emergency brakes on automobiles because they all increase the cost to the user. However, in the interest of safety, everyone wants them regardless of their cost.

We believe that it is the responsibility of the public utility furnishing water, the contractors making the installation, and the inspectional agency of the municipality or state to see that such installations are made in such a manner that, under no anticipated preventable circumstance, will the water be polluted. Potential ignorance, stupidity, or forgetfulness on the part of the occupant of a building is no excuse in our opinion to condone further unsafe

installations of the type now prevalent. The utility and the inspectional agency may be readily placed in a position of jeopardy if unsafe installations are tolerated only because safe ones are more costly.

There is one other practice which is regarded as questionable, and that is the installation of meter pits with drains connected to the sewer. In Detroit any meter well within one hundred feet of a sewer must be drained to the sewer and, if no sewer is within that distance, a sump in the well must be provided so that any water collecting therein may be pumped out. With present automatic heating equipment, water proofing, and insulation, could not such equipment be housed in a rodent, vermin, and water proof structure above grade? Then the problem of gorged sewers or casual water in the meter pit could be eliminated by utilizing such equipment.

As inspectional agencies, the Department of Health and the Department of Buildings and Safety Engineering of the City of Detroit believe it is their duty to direct attention to these two problems in order that appropriate steps according to local administrative authority may be taken to cause unsafe hydrant stops and meter wells to be discontinued.

Second, we wish to direct the attention of inventive, ingenious minds to this problem. We believe the problem is soluble. Manufacturers with research and experimental laboratories can afford to develop the solution. We also believe that if an automatic fool-proof solution can't be found, the present dangerous features must be corrected. We are sure people can be taught to use safe mechanical devices. Therefore, we urge the engineering brains of the nation to eliminate this unseen, possible, and very probable source of water pollution.

# Factors Affecting the Susceptibility to Bacillary Dysentery\*

THOMAS THALE, M.D., AND LINCOLN OPPER, M.D.

*Instructor in Psychiatry, Washington University, St. Louis, Mo.; Pathologist, Norwich State Hospital, Norwich, Conn.*

BACILLARY dysentery is an almost constant menace wherever large numbers of people are massed under conditions which hinder the maintenance of proper individual and group standards of hygiene. Armies, refugee camps, orphanages, prisons, and mental hospitals are particularly liable to epidemics of this disease.

A number of factors which bring about the relatively high morbidity in the situations mentioned above have been identified. Among these are the increased opportunity for the completion of the feces, food, feces cycle offered by crowding and by the presence of carriers or mild cases who remain ambulant.

It is generally believed that warm weather and tropical climate, favoring as they do the presence of flies, facilitate the spread of the disease.<sup>1</sup> On the other hand, it has been observed that in one mental hospital the greatest incidence of infection occurred in the winter when the patients were confined indoors, whereas the rate fell to zero during the summer months when it was possible to distribute the patients on open porches during the day, thus relieving crowding.<sup>2</sup>

In addition to climate and crowding, which affect all, conditions such as occupation or mode of life subject certain individuals to particular risks. This

was long ago pointed out by Pringle<sup>3</sup>: "For in general it may be remarked, that this disease *caeteris paribus* prevails mostly among such as are of scorbutic (that is, putrid) habitus or among poorer people, who from their foul air, bad diet and nastiness are most liable to putrid diseases." In mental hospitals the highest incidence was among the "wet and dirty" cases.<sup>4</sup> In a hospital for mental defectives, there was an inverse relationship between the intelligence level and the rate of morbidity.<sup>4</sup>

It has been claimed that attacks of the disease confer immunity. This contention has been used to explain the greater susceptibility of army recruits as compared with veterans, and the promptness with which newcomers to tropical countries develop the condition while the native population remains apparently healthy. The same principle has been invoked to explain the alleged decrease in morbidity with advancing age,<sup>1</sup> natives of tropical countries, army veterans, and older people presumably having survived previous attacks.

There is no close agreement concerning the value of artificially conferred immunity. An authoritative text on immunology<sup>5</sup> states, "We cannot at the present time recommend the use of dysentery vaccine as a general prophylactic measure."

Cathcart and Gordon<sup>2</sup> reported that they had used a vaccine for the Flexner Y type of dysentery with good results

\* From the Psychiatric Service and Pathological Laboratories of the Norwich State Hospital.

in a mental hospital. Johns and Chalk<sup>6</sup> continued this work, using a slightly different technique. They gave vaccine orally on four successive days, repeating the treatments periodically. Whereas 37 cases had arisen in the year before treatment, only 31 developed in the subsequent nine years. None of these 31 patients had received vaccine within the two years before their infection.

#### BACKGROUND

For several years prior to the present studies, involving the prophylactic use of vaccination, the Flexner strain of bacillary dysentery had been endemic at the Norwich State Hospital with periodic outbreaks of epidemic proportions. During the two years preceding the study, stools of suspected cases of bacillary dysentery were cultured and records of the results were kept.\* It was found that the majority of cases arose on three wards. These were the wards on which the disturbed women, the deteriorated women, and the elderly women resided. During the period of study, all cases of gastroenteritis were isolated, subjected to at least one stool culture followed immediately by sulfaguanidine given in 1 gm. doses every 4 hours for a week. All cases of dysentery were followed with periodic stool cultures. This program permitted the detection of a large number of cases and possible carriers and also decreased the opportunities for transmission because of the prompt sterilization of the stool by sulfaguanidine.

#### PROCEDURE

The subjects of the current study

were the patients who resided on the three wards for elderly, disturbed, and deteriorated women. The highest incidence of infection had previously occurred on these wards.

Patients who had entered the hospital within five months preceding inoculation were eliminated from consideration. All other patients served as subjects for the experiment, being grouped in the following manner:

Those patients who were too ill or debilitated to be fit subjects for inoculation were listed separately from the control and treatment groups.

The remaining relatively healthy patients were listed alphabetically. Consecutive names were taken from the beginning of the list until the desired number of cases for inoculation had been obtained. All other patients served as controls. The number of inoculated patients was greater than the number of control patients because the original purpose of the study was to determine the effect of inoculation.

Some of the patients had suffered a known infection in the past; these were tabulated separately. Previously infected patients were found in each of the groups described above.

A newly exposed group was made up of those patients who had been admitted to the hospital after the beginning of the study and who had subsequently been transferred to the wards under observation.

The treated and control groups were comparable with regard to the age and habits of their members. There was no attempt to segregate the various groups. All patients lived and ate together, no distinction being made between patients of the various groups. The medical and nursing staff caring for them were not informed as to the manner of classification or the class into which any given patient might fall. In this way uniformity of treatment was obtained.

A polyvalent vaccine which incorporated the "V," "W," and "Z" strains of *B. Flexneri* was prepared through the courtesy of Eli Lilly & Company according to the method outlined by

\* Specimens of stool were plated out directly on Eosin-methylene blue agar, Bismuth sulfite agar, and S.S. agar. Suspected colonies were fished to Kligler's Iron Agar slants. This was followed by plating on a non-inhibitory medium for purity and then re-isolation from a single colony, if necessary. Identification of the organism was completed by serological and biochemical reactions.

TABLE 1

Group	Patients		Cases of Dysentery		Cases per 100 Patients per Year	
	Not Infected	Previously Infected	Not Infected	Previously Infected	Not Infected	Previously Infected
Inoculated						
Deteriorated	70	18	8	3	11.4	17.1
Elderly	73	18	9	3	13.6	16.7
Total	143	36	17	6	12.5	16.9
Control						
Deteriorated	65	7	6	2	9.5	28.6
Elderly	47	7	5	0	11.1	0.0
Total	112	14	11	2	10.2	14.5
Ill (not inoc.)						
Deteriorated	12	..	2	..	16.6	....
Elderly	48	6	2	1	5.0	16.7
Total	60	6	4	1	7.7	18.2
Newly exposed (not inoc.)						
Total	57	..	7	..	40.0	....

Paddle,\*<sup>4</sup> strain "Z" being the homologous strain involved in previous outbreaks within the institution. At weekly intervals, injections of 0.5, 1.0, and 1.0 ml., respectively, of the vaccine containing 500 million organisms per ml. were given subcutaneously to the inoculated group.

#### RESULTS

All cases of dysentery occurring during the year after inoculations were

recorded. In Table 1, the size of the different groups, the number of infections in each, and the corrected case rates per one hundred patients per year are shown. The corrected case rate per year was utilized in order to permit comparison of other groups with the newly admitted group, many of whose members were resident on the wards under observation for only a few months.

The newly admitted patients had a markedly higher case rate per year than either the control or inoculated groups. This difference was statistically significant at the 1 per cent level by the Chi-squared test. The incidence of infection was slightly higher in the inoculated groups than in the comparable control groups both for uninfected and previously infected patients. This difference was not statistically reliable nor was the difference between the infirm patients and the younger deteriorated and disturbed patients. The control group did not differ to a reliable degree from the debilitated patients. Neither was there a significant difference between the previously infected and the previously uninfected groups.

In Table 2, the number of infections per month is shown for each of the major groups without distinction as to age or

\* It contained 500 million organisms per ml., the dosage being 0.5 ml., 1 ml., and 1 ml. subcutaneously, at weekly intervals. Given in this way, no unpleasant reactions occurred. The organisms were isolated in pure culture and identified by morphological, cultural, biochemical, and serological methods. The organisms were agglutinated first against polyvalent serum and finally against monovalent Flexner types. Cultures are kept in stock on agar and when a vaccine is required, heavy inoculation is made on two nutrient agar slopes in 12 oz. medical flat bottles and incubated for 18 hours at 37° C. The resultant growth is washed off under aseptic conditions with as little as possible of sterile 0.5 per cent phenol in normal saline into another sterile 12 oz. medical flat bottle containing glass beads, thoroughly shaken, and heated in a water bath at 60° C. for ½ hour. Cultures are then taken and incubated at 37° C. for 48 hours. The amount is again heated for ½ hour at 60° C. if there is any growth. When the emulsion is found to be sterile, the strength is estimated by comparison with opacity tubes and the vaccine is diluted with 0.5 per cent phenol solution in saline to contain 500 million organisms per ml. This is placed in appropriate rubber-capped bottles and by means of a sterile syringe or glass capillary tube cultures are again taken from each bottle and grown aerobically and anaerobically for at least 48 hours to check the sterility. After taking this culture, the cap of this bottle can be sealed.

previous infection. The inoculated patients had more infections in the first month than the controls, and the ratio of two to one in that month is approximately that which obtained over the 12 month period. The low incidence of infection for new patients in the first months is not surprising in view of the fact that the majority of the patients comprising this group had not yet been admitted to the wards under observation.

contact with toilets, either in the form of dabbling in the toilet bowl or cleaning the toilets in bathrooms. Table 4, in which the results are shown, includes some patients excluded from the previous tables because they did not fall in any of the groups into which the patients had been subdivided. Some other patients previously reported are excluded from Table 4 because adequate information concerning their habits was not available. By means of the Chi-

TABLE 2  
*Incidence by Months*

Groups	1943							1944					Total
	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	
Inoculated, all groups	6	..	6	..	..	1	..	6	1	..	2	1	23
Control	3	..	7	..	..	..	1	2	..	..	..	..	13
New Patients	1	..	..	..	..	..	1	5	..	..	..	..	7
Ill	..	1	..	..	..	..	1	2	..	..	1	..	5

In Table 3 the mean age of the infected patients is compared with that of those who were not infected. It will be seen that in both the younger deteriorated group and the older infirm group there was no significant age difference between the infected patients and those who were not infected.

squared test, the incidence of infection in patients showing any behavioral trait was compared with that in those not showing the trait. Where necessary, Yate's correction for small numbers was applied. The "level of confidence," that is, the likelihood that an equally great or greater difference in infection

TABLE 3  
*Mean Age of Infected and Non-infected Patients*

Group	Non-infected Patients			Infected Patients		
	No.	Mean Age	S.D.	No.	Mean Age	S.D.
Control						
Deteriorated	59	46	12.2	6	45	11.6
Infirm	42	67	11.1	5	66	17.4
Inoculated						
Deteriorated	60	45.2	7.3	8	43.25	11.2
Infirm	64	69.4	10.2	9	68.1	7.9

All patients were rated with regard to the usual presence of the following behavioral traits: ambulant (as opposed to bedridden), carelessness with regard to cleanliness, stealing of food, urinary incontinence, fecal incontinence, smearing of feces, eating food from the trays of other patients, eating of the patient's own feces, eating the feces of others, eating rubbish or licking the floor, and

would arise from chance is shown. A level of confidence greater than 10 per cent is usually considered not reliable. Table 4 indicates that the greater opportunity for exposure offered by the ambulant status was not a critical factor nor was the stealing of food of other patients. Patients who were characterized as uncleanly were much more likely to develop infection; when this

TABLE 4

<i>Traits</i>	<i>Infected (94 Patients)</i>	<i>Not Infected (281 Patients)</i>	<i>Level of Confidence</i>
Ambulant	91	260	30%
Careless of cleanliness	49	110	5%
Urinary incontinence	48	104	5%
Fecal incontinence	47	97	2%
Fecal smearing	44	76	1%
Eats own feces	14	15	1%
Eats feces of others	10	10	2%
Eats rubbish—licks floor	17	28	10%
Eats food of others	32	76	30%
Cleans or dabbles in toilets	35	107	90%
One or more uncleanly trait	72	199	40%

uncleanliness was related to excreta, particularly the handling or ingestion of excreta, the likelihood of infection was tremendously increased. An overall impression of cleanliness or uncleanliness distinguished much more sharply between the infected and uninfected than did a separation based on the absence of all uncleanly traits.

#### DISCUSSION

Our data confirm objectively the generally held opinion that poor personal hygiene on the part of many mentally ill individuals facilitates the spread of bacillary dysentery through institutions for the mentally ill and mentally defective. We have demonstrated that uncleanly individuals are more readily infected than cleanly ones. It is highly probable that, once infected, the uncleanly patient is a greater menace than a cleanly one.

It is possible that undetected carriers and subclinical cases played an important part in spreading the infection prior to the liberal and repeated use of sulfaguanidine and the taking of repeated stool cultures following clinical recovery. We favor the use of this relatively insoluble drug because it gives rise to fewer renal and hematological complications than the more readily absorbed sulfonamides, and can therefore be used with greater safety for mass treatment under conditions in which repeated blood and urinary studies are not always possible.<sup>7</sup>

Among the previously exposed, immunity was not enhanced by inoculation or by previous infection. The previously exposed, whether they had suffered a known previous infection or not, were more immune than the newly admitted patients.

The degree of immunity was not affected by age differences or by extreme variations in general health. It may be that the debility of the aged and severely ill patients was offset by their inactivity which afforded them fewer contacts.

The greater susceptibility of newly admitted patients cannot be explained conclusively. One can only conjecture that repeated exposure confers some kind of immunity. In the administration of an institution in which bacillary dysentery is encountered, the difference between immunity of the recently admitted and the stable population is of the greatest practical importance.

#### CONCLUSIONS

1. Patients who were newly exposed to infection by the Flexner type of bacillary dysentery were markedly more susceptible than those who had previously been exposed by residence on wards where the disease was endemic.

2. General uncleanliness was associated to a highly reliable degree with increased morbidity. Of the group of uncleanly traits, the handling or eating of feces showed the most definite relationship with infection.

3. The incidence of clinical infection in a group inoculated with vaccine was slightly higher than in a comparable control group. This difference was not statistically reliable.

4. Age difference was not attended by a significant difference in morbidity.

#### SUMMARY

In the presence of Flexner dysentery, neither inoculation with a polyvalent vaccine nor a previous history of infection resulted in a lowering of incidence compared with control patients. Age and general health did not affect susceptibility. Absence of previous exposure and the presence of uncleanly personal habits were attended by increased morbidity, other conditions being equal.

#### REFERENCES

1. Holmes, W. H. *Bacillary and Rickettsial Infections*. New York: Macmillan, 1940.
2. Cathcart, J. P. S., and Gordon, J. E. An Outbreak of Bacillary Dysentery in the Ontario Hospital, London. *Ontario J. Neuropsychiat.*, Mar., 1924, pp. 52-60.
3. Pringle, J. *Observations on the Diseases of the Army*. Philadelphia: Edward Earle, 1810.
4. Paddle, K. C. L. The Control of Dysentery by Prophylactic Inoculation. *J. Ment. Sc.*, 84:134-135, 1938.
5. Zinsser, H., Enders, J. F., and Fothergill, L. D. *Immunity—Principles and Application in Medicine and Public Health*. 6th ed. New York: Macmillan, 1939.
6. Johns, E. P., and Chalk, S. G. Prophylactic Oral Vaccine in Bacillary Dysentery. *Canad. M. A. J.*, 29:40-43, 1933.
7. Oppen, L., and Hale, V. Sulfaguanidine in Treatment of Dysentery (*Bacterium Flexneri*) Carriers. *J.A.M.A.*, 119:1489-1491, 1942.



# An Epidemiological Study of an Outbreak of Pertussis in a Public School\*

ANNE CLARK RODMAN, WILLIAM L. BRADFORD, M.D.,  
AND GEORGE PACKER BERRY, M.D., F.A.P.H.A.

*Departments of Bacteriology and Pediatrics, University of Rochester School of Medicine and Dentistry, Rochester, N. Y.*

WHILE it is generally agreed that the incidence of pertussis among susceptibles following family exposure is relatively high, varying from 70 to 100 per cent,<sup>1-5</sup> little information is available concerning the incidence of the disease following schoolroom exposure. Culotta, Dominick, and Harrison,<sup>3</sup> in 1938, described a small school epidemic in which only a fifth of the susceptibles developed whooping cough. Their study was based on a classroom group of 23 children, aged 5 to 8 years, of whom 15 gave no history of pertussis. Three children, the original cases, introduced the disease into the classroom, where they remained without isolation during the catarrhal stage. Subsequently, only 3 of the 15 apparently susceptible children (20 per cent) developed the disease. All of them, in fact, were demonstrated to have had family exposure as well. Luttinger<sup>1</sup> stated in 1916 that out of 2,310 cases in New York City, 146 cases (7 per cent) resulted from exposure at school.

During the fall of 1940, an extensive outbreak of pertussis occurred among the children attending a suburban public school near Rochester, N. Y. With

the excellent coöperation of the school authorities, the health officer, the attending physicians, and the parents, it was possible to make a detailed study of this outbreak. The present paper gives some of the facts obtained during the investigation, and details the manner in which the disease spread through the children of the various grades. The incidence following schoolroom exposure is compared with that following family exposure and, in addition, observations on the incidence of the disease among vaccinated individuals are recorded.

The Allen's Creek School (Brighton District School No. 6, Monroe County, N.Y.) opened on September 2, 1940. At the time the present study was made, it had, in eight grades and a kindergarten, a total enrollment of 205 pupils, ranging in age from 4 to 15 years. Of this number, 80 were girls and 125 were boys. In addition, there were studied 74 preschool children and infants representing family contacts. These children, coming from families separated widely in social status, received different degrees of medical attention, ranging from none at all to the best available. In general, however, their medical care and home environment were good.

The size of the classes varied from

\* Based on portions of a thesis presented by Anne Clark Rodman in June, 1941, to the University of Rochester in partial fulfillment of the requirements for the degree of Master of Science in Bacteriology.

18 to 31, the average being 22. Each class had its own room and teacher and was kept entirely apart from the other classes, except for one weekly assembly at which the whole school gathered. Even on this occasion, the children were seated by grades, so that contact between the different classes was so slight as to be negligible. A further exception must be made for some members of the upper three grades who came together for certain work. Other than these contacts, we may consider each class as a separate unit. Within each classroom, the contacts were close and constant.

The investigation of the epidemic began shortly after it had reached its peak. It was, therefore, in no way connected with the institution of control measures. It was, rather, a study in retrospect of the spread of the disease through the school children and the family contacts. Since a large percentage of the school children and their siblings had received prophylactic inoculations of various types, the results cannot be compared with those from any group in which vaccination had been carefully controlled. The results, however, indicate that vaccines prepared from freshly isolated strains of *Hemophilus pertussis* are protective.

The epidemic began in the "H" family, consisting of the parents and 5 children, of whom only the father gave a prior history of pertussis. Three of the children entered school when it opened on September 2, a fourth was of preschool age, and a fifth had been born on August 19. Z.H., in the 5th grade, developed pertussis on August 17; B.H., in the 3rd grade, on August 22; and K.H., in the 1st grade, on September 7. S.H., of preschool age, began to cough on September 3. None of the cases was reported to the health authorities and no physician was in attendance until Mrs. H. was delivered of her baby, T.H., on August 19. She and the baby

subsequently developed the disease. The cases were then reported.

The "H" family lived in moderate circumstances in a small suburban neighborhood where there were many children living under similar conditions. This group had the lowest economic status of any family sending children to the school. There were 19 other families living in frame houses and in somewhat crowded surroundings within a radius of 2 blocks. In these 19 families there were 35 children, the majority having received but little medical care.

During August, before the opening of school, the "H" children played freely with their neighbors, with the result, surprising perhaps, that the disease was transmitted to only a single child. When the school opened on September 2, 2 of the "H" children, both whooping, attended school and remained there for 2 weeks. Within 5 days, a third child in the family developed pertussis, and was also permitted to remain in school. In this manner an active focus of infection was created in the 1st, 3rd, and 5th grades (Figure 1). The spread of the disease within the school from these 3 main sources will be described later.

The present investigation was begun early in November and was concluded in January, by which time the epidemic had subsided. The method of investigation was as follows. One of the parents, usually the mother, of each child in the school was interviewed either by telephone or by personal visit and was asked to supply the following information:

1. Name, age, sex, and grade of the child.
2. (a) Had the child previously had whooping cough?
  - (b) Did the child develop pertussis during this epidemic? If so, what was the date of onset? Was the attack mild, moderately severe, or severe?
  - (c) Did the child escape infection during the epidemic?
3. Had the child received pertussis vaccine at

## THE SPREAD OF PERTUSSIS IN A SCHOOL OUTBREAK

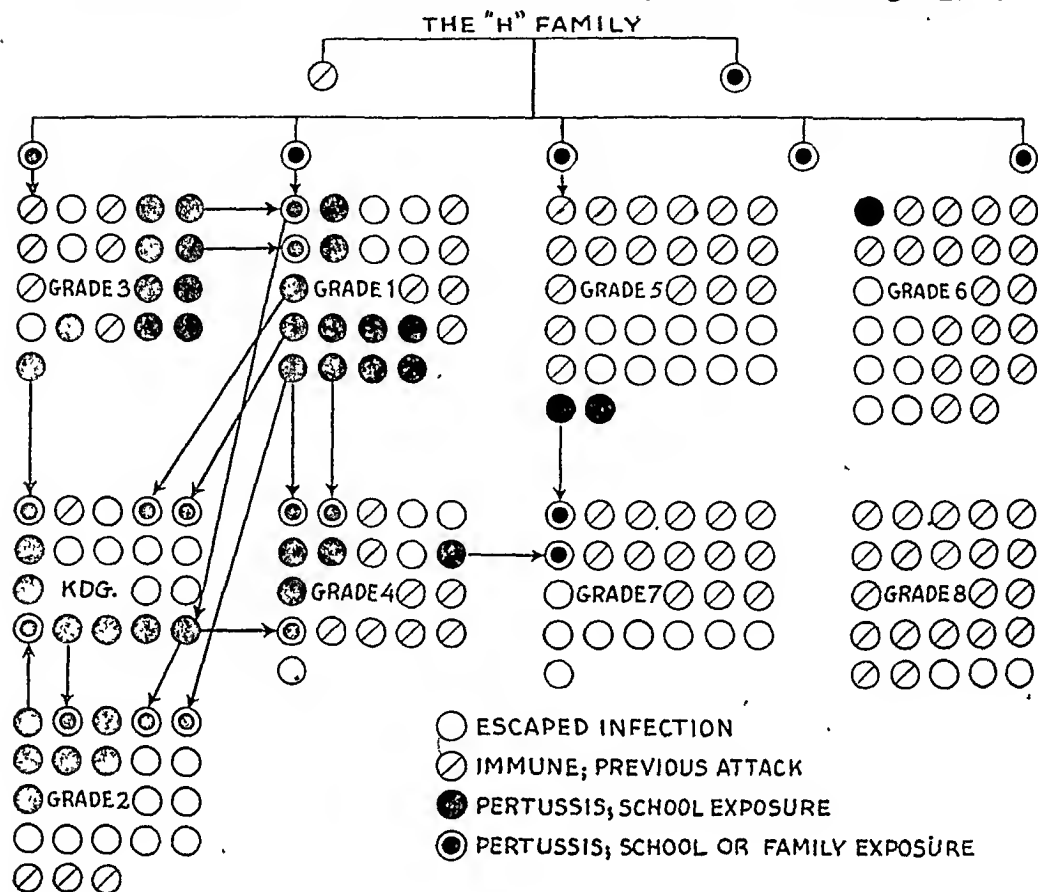


FIGURE 1—Diagrammatic Representation of the Spread of Pertussis in a School. Each Circle Stands for a Single Child. The Arrows Indicate the Probable Routes of Spread. The Arrow Pointing to a Schoolroom Exposure in the KDG. Represents a Probable Outside Rather than a Family Exposure to the Case.

any time prior to, or during, the epidemic? If so, when and by whom was it administered?

Answers to these questions were secured for each pupil and all members of the family. The results were tabulated according to family and school grade.

Each of the children vaccinated prophylactically was checked further by consulting his physician, from whom the type, dosage, and dates of vaccination were obtained. The clinical diagnosis could not be verified by culture in every instance because we were not aware of the epidemic until it had reached its height. A great many of

the cases, however, were attended by well qualified physicians, who made cough-plate cultures in many instances.

#### EPIDEMIOLOGICAL DATA

*The spread of pertussis among the school children*—The distribution of the children is recorded according to grade in Table 1. The number of immunes in each grade is indicated, as are the number of susceptible who contracted the disease during the school epidemic and the number who escaped infection. A child is considered "susceptible" if there is no history of a prior attack of pertussis, regardless of whether or not the child had received pertussis vaccine.

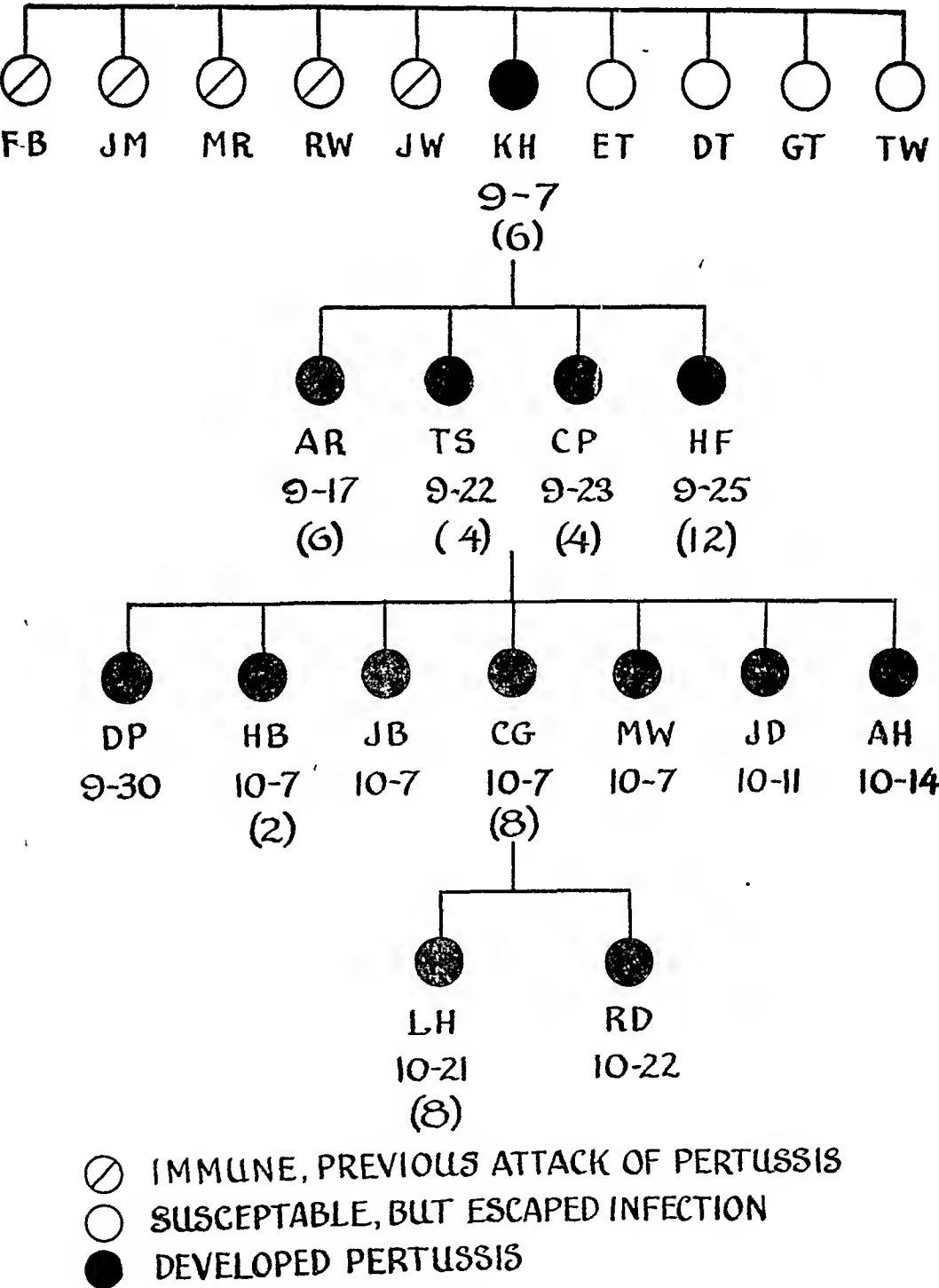


FIGURE 2—Diagrammatic Representation of the Spread of Pertussis in Grade 1. Each Circle Stands for a Single Child, Whose Initials Are Given Immediately Below It. By Noting the Dates of Onset (Month and Day Below Initials of Affected Children), the Periodic Character of the Spread Is Suggested. The Figures in Parentheses Give the Number of Days the Child in Question Remained in the Schoolroom While Suffering from Pertussis.

Of a total of 112 susceptible children in the school, 57 (51 per cent) developed pertussis—40 (36 per cent) as a result of schoolroom exposure only. It may be seen in Table 1 that this rate is much higher than in the 1st and 3rd grades. In the 1st grade, for instance, there were 18 susceptibles and 11 of them (61 per cent) developed pertussis as the result of schoolroom exposure. Three cases in this grade also had family exposure.

that 4 cases resulted approximately 2 weeks after that of K.H., 7 more approximately 2 weeks later, and 2 more after a third 2 week interval. This periodicity conforms to the usually accepted incubation period of pertussis and supports the contention that the contacts were made in the schoolroom.

In the 3rd grade, a similar schoolroom outbreak occurred. A girl, B.H., aged 8, in the second week of the disease (onset August 22), remained in the

TABLE 1

*Distribution of Immune and Susceptible Children According to School Grade*

	Grade								Total
	Kdg.	1	2	3	4	5	6	7	
Number of children	18	23	21	20	19	31	27	23	205
Number immune (history of previous pertussis)	1	5	3	6	8	18	19	13	93
Number of susceptibles* escaping infection	7	4	9	3	4	10	7	8	55
Number developing pertussis during epidemic	10	14	9	11	7	3	1	2	57
a. Schoolroom exposures only	6	11	6	10	4	2	1	0	40
b. Schoolroom or family exposures	4	3	3	1	3	1	0	2	17

Kdg = Kindergarten

\* Susceptible means a negative history of previous attack of pertussis

The spread of the disease within the 1st grade was interesting. When the date of onset of each case was recorded, the resulting pattern (Figure 2) showed the kind of periodicity that was to be expected. On September 7, 5 days after the opening of school, a boy, K.H., aged 6, developed a slight cough. In his classroom there were 22 other children, only 5 of whom had had the disease previously. No notice of K.H.'s cough was taken until September 13, when it was recognized as pertussis and he was excluded from the school. On September 17, another child came down with a slight cough but attended school until the 23rd. On September 22, still another child began to cough and remained in school until the 26th. A fourth case occurred on September 23 and remained in school until the 27th. A fifth, who became ill on September 25, remained for 2 weeks. Between September 30 and October 22, 9 more cases developed. It will be observed

classroom for 2 weeks following the opening of school September 2, during which time she was in daily contact with 19 children, 13 of whom were susceptible. Of these 13, 10 contracted the disease. None of this group presumably had family exposure. The first secondary case began to cough on October 1 and remained in school until the 15th. Subsequent cases developed the disease on October 6, 10, 18, 20, 22, and 30. The last case in this classroom developed it on November 9. Thus, of 13 susceptibles in the 3rd grade, 10 (77 per cent) developed pertussis.

In the 5th grade, there were 13 susceptibles among a group of 31 children. A boy, Z.H., in the third week of pertussis, introduced the infection. Only 2 other children developed the disease. There were 18 immune children in this grade, a fact that possibly explains in part the low incidence. Also, it is probable that Z.H. was not

TABLE 2

*The Effect of Vaccine on the Incidence of Pertussis*

Grade	Total Pupils	Susceptibles	Vaccine		No Vaccine	
			Number	Developed Pertussis	Number	Developed Pertussis
Kdg.	18	17	5	1	12	9
1	23	18	4	2	14	12
2	21	18	8	2	10	7
3	20	14	5	3	9	8
4	19	11	3	0	8	7
5	31	13	3	0	10	3
6	27	8	1	0	7	1
7	23	10	0	0	10	2
8	23	3	0	0	3	0
Total	205	112	29	8	83	49

very infectious at the time when he exposed his classmates.

The manner in which the disease was introduced into each class is illustrated in Figure 1. The arrows indicate the source of infection (certain individuals) and show how the infection was spread from one grade to another. It is apparent that family exposure largely accounted for the spread of the disease into the kindergarten, and into the 2nd, 4th, and 7th grades. The origin of the single case in the 6th grade was not discovered.

*The occurrence of pertussis in family groups*—The 205 school children had 74 brothers and sisters who did not attend the school. Of these 74 siblings, 14 were preschool susceptibles exposed at home to a school child with pertussis. Thirteen (93 per cent) of this group developed the disease. Of the 205 school children, 112 susceptibles were presumably exposed at school. Twenty-two of them were also exposed at home. Seventeen (80 per cent) of this group became infected. If we consider the two groups together as family exposures, 30 (83 per cent) of the 36 children exposed in the families developed pertussis. As previously stated 57 (51 per cent) of the 112 susceptible school children developed the disease.

*The effect of vaccine on the incidence of pertussis*—Eight different commercial vaccines were used by the various at-

tending physicians in total dosages which varied from 1.5 to 80 billion organisms. No physician adhered to a standard dosage of a given vaccine for all of his patients. Thus, it was impossible to evaluate any particular preparation. It was possible, however, to group the children who had been injected at least 3 months prior to the onset of the epidemic, with 1 of 6 different commercial vaccines, prepared from freshly isolated strains of *Hemophilus pertussis*. There were 29 such instances among the 112 susceptible school children.

It may be seen in Table 2 that, of the 83 children who had received no vaccine, 49 (59 per cent) developed pertussis, while of the 29 who had been immunized 8 (28 per cent) contracted the disease. This gives a difference in percentages of 31 with the standard error of the difference equal to 10, indicating that the difference is probably significant. In a similar classification of all family exposures, 5 of 7 vaccinated children contracted pertussis as did all of the 21 unvaccinated. The difference in percentages here is 29 with a standard error of 17, a finding which possibly suggests that vaccination was not effective in family exposure, although, obviously, the series of cases is too small to permit a final conclusion.

The results presented above include several instances in which the total

TABLE 3

*The Effect of Immunization with Vaccine (50 Billion or More Organisms) against Schoolroom Exposure to Pertussis \**

	Total	Developed Pertussis	Difference in Percentages	Standard Error	Ratio
Vaccinated	19	2 (10.5%)	43.5	9.4	4.6 to 1
No vaccine	65	35 (54 %)			

\* Data shown in Table 2 modified by eliminating all the cases of family exposure and all those immunized with less than 50 billion organisms

dosage was less than 50 billion organisms. If the analysis of the findings is modified to eliminate all cases of family exposure and all children who received less than 50 billion organisms (Table 2), the results (Table 3) definitely indicate that the vaccine exerted a protective influence in schoolroom exposure. Under these conditions we find that only 2 (10.5 per cent) of 19 in the vaccinated group developed pertussis as compared with 35 (54 per cent) of the 65 in the unvaccinated group. The standard error of the difference in the percentages (43.5) is 9.4, giving a ratio between the difference in percentages and its standard error of 4.6 to 1.

In addition to the 29 vaccinated school children, there were 6 vaccinated preschool siblings. In this group of 35 vaccinated children, 14 had received less than 50 billion organisms and 21 more than 50 billion organisms. Ten of the former group developed pertussis, while only 3 of the latter group contracted the disease. These findings suggest that a dose of 50 billion organisms or more affords better protection than does one of less than 50 billion. The difference in the percentages (57) is four times its standard error (14).

#### SUMMARY

An epidemiological study of an outbreak of pertussis in a suburban public school is presented. Fifty-seven cases (51 per cent) occurred among 112

susceptible children in the school with an enrollment of 205. Forty of the cases followed schoolroom exposure, while 17 cases may have occurred as a result of family contacts.

Among 94 children presumably exposed only in the schoolroom, 40 (42.5 per cent) developed pertussis as compared with 30 (83 per cent) in a group of 36 with family exposure.

Cases resulting from family exposure were important in introducing pertussis into certain grades of the school.

Observations on a small group of 29 children who had been immunized with vaccines prepared from freshly isolated strains of *Hemophilus pertussis* indicated significant protection from schoolroom exposure, particularly when the total dose of vaccine was 50 billion organisms or more.

**ACKNOWLEDGMENT:** It is a pleasure to acknowledge the fine cooperation of the physicians, the school authorities, and the Health Officers, Dr. Paul A. Lembcke and Dr. Eugene W. Rother, whose assistance made the present study possible.

#### REFERENCES

1. Lutinger, P. The Epidemiology of Pertussis. Introductory. *Am. J. Dis. Child.*, 12:290-315, 1916.
2. Von Sholly, A. I., Blum, J., and Smith, L. The Therapeutic Value of Pertussis Vaccine in Whooping Cough. *J.A.M.A.*, 68:1451-1456, 1917.
3. Culotta, C. E., Dominick, D., and Harrison, E. R. Epidemiologic Studies in Whooping Cough. *Fale J. Biol. & Med.*, 10:473-483, 1937-1938.
4. Doull, J. A., Shibley, G. S., Haskins, G. E., Bancroft, H., McClelland, J. E., and Hoelscher, H. Active Immunization against Pertussis. Final Report on the Cleveland Immunization of 1934-1935. *Am. J. Dis. Child.*, 58:691-698, 1939.
5. Faber, H. K., and Miller, J. J., Jr. Immunization Against Pertussis. *Am. J. Dis. Child.*, 60: 1172-1173, 1940.

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## ADVANCES IN FEDERAL HEALTH LEGISLATION AND ORGANIZATION

THE 79th Congress made an excellent record in the international field; but its contributions in the area of domestic legislation were disappointing. The House of Representatives, in particular, was markedly subservient to private vested interests. As *The New Republic* said "Congress has gone home for the year without doing anything to provide millions of American citizens with decent homes, adequate medical care, social security protection, or a minimum living wage." The Kilgore-Magnuson bill for a National Science Foundation passed the Senate but died in the Interstate and Foreign Commerce Committee of the House. The Wagner-Ellender-Taft bill for a nation-wide housing program passed the Senate and was held up by the filibustering tactics of two or three members of the House Committee on Banking and Currency, at the behest of the Real Estate Lobby. The House Ways and Means Committee completely emasculated the bill for extending social security benefits including compensation for permanent disability. In each of these cases, the groups concerned would have feared to record themselves publicly by adverse votes and successfully used a cloak-and-dagger technique behind the doors of a committee room.

The bill carrying an appropriation of 100 million dollars for a comprehensive national program of research on cancer control was defeated in the House; but the regular appropriation of the U. S. Public Health Service for this purpose was increased to \$1,772,000.

Three important steps were, however, taken in the field of public health. In some ways the most important of these was the passage of what was originally the Hill-Burton Bill for developing a really adequate national hospital program. Even this measure was marred by two objectionable "riders"; one providing that a Hospital Council appointed by the Federal Security Administrator may veto certain actions of the Surgeon General of the U. S. Public Health Service, including disapproval of a state plan because it fails to conform with federal law, and another providing that a state agency may appeal to the federal courts from denial of a particular project. This is pork barrel legislation, to which Presi-



dent Truman strongly objected in signing the bill. In other respects, however, the measure is admirable. It involves federal appropriations of \$3,000,000 for the survey of hospital and health center needs and \$375,000,000 for construction of physical facilities, the federal contribution to be matched in the ratio of 2:1 by local funds. The program will extend over a period of 5 years and will be administered by the Surgeon General, with the advice of the Federal Hospital Council mentioned above, but provides the fullest latitude for each state to develop its own program of hospital and health center construction to be administered by state authorities under specified standards. Project sponsors may be states, cities, or other governmental agencies, or private non-profit hospitals.

The estimates of the U. S. Public Health Service indicate a total ultimate need of 169,579 additional general hospital beds, plus replacement of 83,899 beds in the United States (to reach a ratio of 4.5 beds per 1,000 population); of 65,189 new tuberculosis beds, plus replacement of 17,313 beds (to reach a ratio of 2.5 beds per annual death from this disease); of 208,963 beds for nervous and mental diseases plus replacement of 99,583 beds (to reach a ratio of 5 per 100 population); of 270,173 new beds for chronic diseases; and of 4,503 public health centers. The present five year appropriation covers 23 per cent of the estimated total ultimate need, as outlined above.

A second major achievement of this session in the field of public health was the passage of the National Mental Health Act (the Priest Bill). This measure provides \$7,500,000 for the erection and equipment of hospital and laboratory facilities to be operated by the U. S. Public Health Service as the stimulating center for research, experimentation, and specialized training in this most important field; with \$10,000,000 for grants to the states, and an additional \$1,000,000 for demonstrations and personnel to assist the states in research and training. The entire program is to be operated under a special Advisory Council of experts appointed by the Surgeon General.

Another notable advance of the year is the reorganization of the Federal Security Agency under which most of the federal health activities will now function. This was one of three measures of reform presented by President Truman under the existing laws which provide that plans for reorganization of federal bureaus proposed by the President become automatically effective if not disapproved by both Houses of Congress within a specified period of time. True to its reactionary form, the House of Representatives promptly disapproved all three reorganization plans presented by the President, but fortunately the Senate disapproved only one of the three.

Reorganization Plan No. 2, with which we are here concerned was one of the survivors and went into force on July 16 last. It provides a long step forward in the coordination of the various health activities of the federal government, a goal toward which our Association has striven for many years. In particular, it brings the Children's Bureau, the Vital Statistics Division of the Census, and the Food and Drug Administration into the same general agency in which the United States Public Health Service functions.

The Federal Security Agency will now include four main operating branches as follows:

*Social Security Administration*, under Commissioner A. J. Altmeyer; to include the old-age and survivors insurance, employment security, and public assistance programs of the old Social Security Board and the activities of the

Children's Bureau (which will continue under the direction of Katherine Lenroot). *Education*, to include the functions of the old Office of Education.

*Public Health*, under Surgeon General Parran; to include the past functions of the U. S. Public Health Service, the management of St. Elizabeths and Freedmen's Hospital and the work of the division of Vital Statistics (transferred from the Department of Commerce, but remaining under the direction of Halbert Dunn).

*Office of Special Services*, including the work of the Food and Drug Administration and of several other activities relating to unemployment compensation, vocational rehabilitation, etc.

The position allotted to the Children's Bureau in this program will not fully satisfy more ardent partisans of either "health" or "welfare." The former would have preferred to see it united with the U. S. Public Health Service; the latter to have it recognized as a primary division of the F.S.A., reporting directly to the Administrator of the Federal Security Agency. It should be remembered, however, that the very nature of the Children's Bureau presents problems which are not susceptible of easy rough-and-ready solution.

From a "functionalist's" point of view, the Children's Bureau is and always has been illogical in its organization as an independent unit of government. Its purpose obviously is to serve a group of individuals in the population that cannot organize and speak for themselves like the Veterans, but a group that, even more than the Veterans, requires that special attention be given to it by the government if the nation's interest is to be well served. The old arguments that the needs of children cannot be pigeonholed into health and welfare compartments and that the "child as a whole" must be the center of our attention are as true today as in 1912 when the Children's Bureau came into existence. The welfare interests of children are no more limited to the "poor" or to those in receipt of public assistance than are their health interests. A program of child welfare must be kept as free of a "means test" as the health and medical program.

Commenting on the relationship of the Children's Bureau programs to other services within the Agency, Administrator Watson B. Miller has said: "We are very mindful of youth's stake in all provisions for health, education, and security—and of the government's obligation to make adequate provisions to the end that all children and young people may get a good start in life. For administrative purposes, the Children's Bureau, with its programs for maternal and child health, child welfare, and crippled children's services, has been placed in the Social Security Administration. But its relationships with both health and education are fully recognized, and effective coördination in this field will be one of our major objectives. Studies will be inaugurated at once and maintained on a continuing basis, looking toward improvements in procedures and the strengthening of relationships."

Administrator Miller has delegated his authority over the Children's Bureau to Mr. Altmeyer, the Commissioner of Social Security, who in turn has delegated back to the Chief of the Children's Bureau all previous functions including approval of state plans for maternal and child health, crippled children, and child welfare services. There appears to be every intention on the part of the Commissioner to allow the Bureau to function freely as in the past. Relationships between the Children's Bureau and the Public Health Service will continue to be direct. All in all, the proposed plan seems as sound a one as could be worked out at the present moment. The sum allotted to the maternal

and child health and crippled children's services was doubled by an increase to \$22,000,000 in the last hours of the Session.

Health officers will be particularly pleased that the reorganization plan includes direction to the FSA to establish, in so far as practical, uniform standards and procedures so that state agencies administering several grant programs may submit a single state plan, under unified fiscal, personnel, and other policies. The greatest single cause of dissatisfaction with past programs of Federal Aid has been the necessity of submitting separate budgets and meeting separate regulations for general public health, tuberculosis, venereal disease, child welfare, crippled children, and EMIC activities. A plan for a combined budget has already been drawn up (by coöperation between the U. S. Public Health Service and the Children's Bureau), and it is hoped that a single auditing plan and a single merit system plan may soon be in operation.

On the whole, the provisions of Reorganization Plan No. 2 mark a long step along the road to better coördination in the upbuilding of a comprehensive and soundly conceived national health program. They will make possible the experimental development of relationships which we hope may some day be crystallized in a full-fledged cabinet Department of Health and Welfare.

## REVISION OF CONSTITUTION AND BY-LAWS

AN important task of the Association at its Annual Meeting next month will be consideration of the revised Constitution prepared by the Committee on Constitution and By-Laws, under the chairmanship of Dr. E. S. Godfrey. The full text of the proposed revision has been presented in the columns of this *Journal*.<sup>1</sup>

The new draft involves only minor substantive changes and apparently avoids any controversial issues. It is essentially a rearrangement of the old Constitution and By-Laws in the interest of simplicity and clarity.

We believe that the Association is fortunate in the brevity and conciseness of its basic Constitution. The By-Laws will remain—as at present—within the jurisdiction of the Governing Council and can be modified as experience may suggest. The Constitution however, which is, and should be, relatively stable, is a document of not much over 2,000 words and deals only with fundamental and basic principles. It is, in this respect, a refreshing contrast to the constitutions of many professional societies which contain detailed provisions hampering progress at every turn.

The Association is particularly to be congratulated on the plan on which its Governing Council is established. Some of us can well remember the political manipulations which dominated our own annual meetings prior to the adoption of the present Constitution. The atmosphere has completely changed today. When, as in some other organizations, control rests in a body of delegates elected each year solely by local geographical units for that purpose, there is a real beginning of representative government; but there remains the liability of log-rolling characteristic of a party convention. Our own plan, as in force now for many years, gives us a Governing Council which includes representation of local geographical groups through the representatives of Affiliated Societies and Regional Branches; representatives of the diverse technical interests of the Association through Section delegates; and representatives of the elder statesmen of

the Association through the elective councillors. This assures a unique balance of power and has resulted in a complete absence of "politics," in the derogatory sense of that term and a consideration of policies and a choice of officers governed by broad and constructive considerations. With our growing membership (which has already passed the 10,000 mark), it is most gratifying that we have such a sound basis on which to build for the future.

## REFERENCE

1. Report of the Committee on Constitution and By-Laws of the American Public Health Association—Edward S. Godfrey, Jr., M.D., Chairman. *A J P H.*, 36, 9 1048 (Sept.), 1946

## RESEARCH IN INDUSTRIAL HYGIENE

THE history of industrial hygiene in the United States is perhaps unique in respect to the proportion of basic contributions to knowledge which have been made by governmental agencies. In microbiology, physiological hygiene, and vital statistics, major advances have commonly been made in university laboratories. The fine contributions of the U. S. Public Health Service to epidemiology are balanced by a mass of similar advances made in the schools of public health. Even in sanitary engineering, where progress has been embodied largely in the reports of official boards and commissions, university professors have played a most important rôle.

In industrial hygiene, however, the balance is on the other side of the scales. Harvard has made major contributions to our knowledge; but, with this exception, the rôle of the universities has not been large. Alice Hamilton, the most outstanding pioneer in this field, began her work as the agent of a commission of the State of Illinois. During the past twenty years, the United States Public Health Service, in collaboration with the United States Bureau of Mines, has been the center of the whole movement. State health departments, in Massachusetts, Connecticut, and other states have provided distinguished leadership.

The United States Public Health Service's monthly bulletin *Industrial Hygiene* gives a current picture of a remarkably vigorous movement, in which governmental agencies, professional groups, and industry are actively coöperating. Last April 1,584 physicians, dentists, nurses, engineers, and chemists met in conference at Chicago to discuss their common problems.

It is of interest to note that fundamental contributions in this field are by no means limited to agencies primarily representing the public health field. The Safety Council, some years ago, sponsored basic studies of benzol poisoning and spray coating. The Division of Industrial Hygiene and Safety Standards of the New York State Department of Labor publishes a *Monthly Review* (actually appearing every two weeks) which contains a series of solid scientific studies of the greatest value. During the first three months of the present year, this *Review* presented new and important data on Hood and Booth Types Available to Solve Typical Ventilation Problems; on Control of Health Hazards from Rubber Cementing Operations in Shoe and Slipper Manufacture; on Health Hazards in the Use of Pneumatic Tools (by Ludwig Teleky, an outstanding international leader in this field); on Mercury Vapor Exposure in the Mercury Thermometer Industry; and on Studies with Paraphenylenediamine in Fur Workers.

A particularly significant development is the recent coöperation between the United States Public Health Service and the American Society of Heating and

Ventilating Engineers. This Society, by its constitution, allots 40 per cent of its membership dues to research and maintains an excellently equipped research laboratory at Cleveland. The U. S. Public Health Service last year assigned A. D. Brandt to work in this laboratory, and the first fruits of this coöperative study have recently appeared in a study of Energy Losses at Suction Hoods<sup>1</sup> which furnishes basic data necessary for the design of such hoods which have been greatly needed and will be invaluable alike to designers of local exhaust systems and to officials controlling the operation of such systems.

## REFERENCE

1. Brandt, A. D., and Steffy, R. J. Energy Losses at Suction Hoods, *Heating Piping and Air-Conditioning*. American Society of Heating and Ventilating Engineers Journal Section, 18:109 (Apr.), 1946.

## Best Sellers in the Book Service for September

The Control of Communicable Diseases. American Public Health Association. 6th ed. (1945) . . . . .	\$ .35
Diagnostic Procedures and Reagents. American Public Health Association. 2nd ed. (1945) . . . . .	4.00
Microbiology of Foods. F. W. Tanner. 2nd ed. (1944) . . . . .	12.50
Public Health Administration in the United States. W. G. Smillie. 2nd ed. (1940) . . . .	4.00
Recommended Practice for Design, Equipment and Operation of Swimming Pools and Other Public Bathing Places. American Public Health Association. (1942) . . . . .	.50
Standard Methods for the Examination of Dairy Products. American Public Health Association. 8th ed. (1941) . . . . . paper	1.75
Suggested School Health Policies. National Committee on School Health Policies. 2nd ed. rev. (1945) . . . . .	.25
Topley and Wilson's Principles of Bacteriology and Immunity. G. S. Wilson and A. A. Miles. 3rd ed. rev. 2 vols. (1946) . . . . .	12.00

Order from the Book Service  
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## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

Alcohol, Science and Society—*New Haven: Quarterly Journal of Studies on Alcohol*, 1945. 473 pp. Price, \$5.00.

These twenty-nine lectures and discussions are of very uneven quality as is apt to be the way with a symposium intended to give comprehensive attention to such a wide scope of matter by persons of unequal competence. The medical, social, legal, educational, and religious factors are presented, with the sociologists rather leaning over backward to explain, justify, excuse, and apologize for that fraction of emotionally abnormal and mentally unstable people who find relief from their frustrations and tensions in the drinking of liquor.

The volume is a valuable mirror in which the struggle between the force of facts and traditional self-deception can be seen. In an obvious attempt to be objective, broad, generous, fair in weighing reasons and results, the authors often ignore the clear evidence of inferiority of conduct, health, work and social relations constantly exhibited by the customary user of alcoholic beverages today.

Haggard continues to call alcohol a food and to support its "moderate" use. His chapter on physiological effects is admirable. Jellinek seems to have ignored the classical studies of Benedict and Dodge. There is much theorizing in the fields of personality and sociology but no statesmanlike or scholarly expression of an authoritative kind, and the complexities of the present social pattern are but little clarified by the seven effects attributed to them in lecture 14.

This book is not only a symbol of a notable academic contribution in a field of great scientific and social importance but reveals the strength and usefulness of collective effort to explore and express all the truth that has been established. The reading public should be very wide. HAVEN EMERSON

Food Buyer's Information Book—*By Alexander Todoroff. Chicago: The Grocery Trade Publishing House*, 1946. 380 pp. Price, \$4.00.

The contents of this volume, prepared in a convenient and concise question and answer form, describe nearly all the foods on today's market. The approach is objective and free of any commercial or propaganda references. The author discusses practical and sometimes controversial questions about the foods we buy in our groceries. He offers an outline of the varieties of items and methods of marketing, together with suggestions for the use of some products not widely known. This is, however, more a general survey than a detailed report. Perhaps the most valuable contribution is the guidance to the proper selection of different foods by the purchaser. This small encyclopedia should find a welcome place in the library of any housewife, cook, or buyer of foodstuffs. It is thoroughly indexed for rapid use.

VIRGINIA P. ELDER

How to Read Statistics—*By R. L. C. Butsch, Ph.D. Milwaukee: Bruce Publishing Company*, 1946. 184 pp. Price, \$2.50.

The primary purpose of this book is to assist those workers in the fields of

education, social science, and psychology, who do not have a thorough knowledge of statistical techniques. The book carries the reader through a nontechnical interpretation of statistical treatment and terminology without going into computational details. It will probably be of no interest to public health workers, since the data and many of the techniques considered are limited to the educational field. In fact, many of the data appear to be highly artificial. While the section on the frequency distribution and graphical methods makes interesting reading, the long section devoted to the various correlation coefficients is rather poorly done and certainly of no interest to the public health worker. The section on chance variation is likewise of limited utility and appears to be very ill-balanced.

JOHN W. FERTIG

Katharine Kent — By Mary S. Gardner. New York: Macmillan, 1946. 298 pp. Price, \$2.75.

Miss Gardner's new book, *Katharine Kent*, might well have been subtitled "A Biography of a Public Health Nurse," for it takes Katharine from the day of her graduation from a school of nursing through thirty years of absorbing experience in the rapidly developing field of public health. Katharine learns nearly everything the hard way, thereby serving to show the right way to prepare for public health nursing. Because she learns from life as well as from books and from her friendly advisers most of all, she emerges at the close of the book a poised, mature, and competent administrator and leader in her field. It is a satisfaction to say that Miss Gardner has bent her plot to her purposes in expounding the principles of public health nursing and has not exploited her material for the sake of a dramatic story, tempting though this must have been. Indeed, this book is

not fiction in the usual sense; it is historical and biographical reporting of the growth of a great movement—public health nursing—and Katharine's activities should be read with this serious accomplishment in mind.

I believe public health nurses, health officers, and the "lay" public concerned with community health will enjoy and greatly profit by reading this book, especially board and committee members. It is full of Miss Gardner's own sound philosophy and high ideals, gleaned from a very rich experience in public health nursing, locally, nationally, and internationally. It "interprets" very successfully. I am a little doubtful whether student nurses—who should read the book—will stay with the author at all points. Some of the discussions dealing with organization are a little abstruse for those without experience, but the human interest in Katharine herself will carry all readers to the end. Those nurses now faced with the problem of help to the countries abroad following a second world war will find Miss Gardner's report of conditions overseas in 1921–1922 especially pertinent and timely.

Because this book is excellent supplementary teaching material, this reviewer mourns the author's failure to "name names." Why omit the illustrious name of Lillian D. Wald? Why refer only indirectly or by initials to our very wonderful leaders of those early days—Ella Phillips Crandall, Jane Delano, Anne Strong, Edna Foley, or among the living such advisers as Drs. Winslow and Parran, Miss Nutting and Miss Goodrich? Instructors will have to supply these names. This reviewer missed also some of the colorful details dear to a public health nurse's heart: the contents of that first nursing bag, Miss Gardner, your uniform, your very own first-hand experience in launching the N.O.P.H.N. on that hot June day in Chicago. In fact, many will wish

you had written this in the first person singular, as only you can. Or are you saving these treasures for your next book—an autobiography?

DOROTHY DEMING

**Medical Services by Government**—By *Bernhard J. Stern, Ph.D.* New York: Commonwealth Fund, 1946. 208 pp. Price, \$1.50.

This monograph, one of a series of publications sponsored by the New York Academy of Medicine Committee on Medicine and the Changing Order, gives a brief account of the historical development and present organization of medical care provided at taxpayers' expense. The presentation is focused on description of the part played by the various units of government and on administrative questions rather than on analysis of existing programs by type and on evaluation of the basic principles of policy that have emerged. The book may be useful as an introduction to the study of medical care, but its value is impaired by inconsistency in arranging the subject matter and inadequate treatment of several of the outstanding public medical care programs.

FRANZ GOLDMANN

**Microanalysis of Food and Drug Products**—Prepared by *Food and Drug Administration*. Washington: U. S. Govt. Ptg. Office, 1944. 171 pp. Price, \$.30.

The U. S. Food, Drug, and Cosmetic Act contains provisions relating to sanitation which were not included in the prior Food and Drug Act. This circular has resulted from several years' work in the enforcement of the sanitation provisions of the new Act. In some respects it is very elementary, in others, highly complex, but in all respects it is accurate.

There are chapters on optical crystallography, microscopic examination for filth, methods for filth recovery, and

interesting chapters on "insectology" and on molds in food. The chapter on plant sanitation contains four very fine essays which point out the difference between the "frills" which may be of esthetic value only and the hidden sources of unsanitation. The circular is profusely illustrated by drawings, photographs and photomicrographs.

HERMANN C. LYTHGOE

**Principles and Practice of Tropical Medicine**—By *L. Everard Napier*. New York: Macmillan, 1946. 917 pp., illus. Price, \$11.00.

This is the completed work which was published in part in Calcutta in 1943, and was reviewed in this *Journal* (October, 1944). Dr. Napier completed the book while in the United States as Visiting Professor of Tropical Medicine at Tulane University, New York University, and Harvard University. The new portion of the book comprising the last 395 pages consists of chapters on yaws, tropical skin ulcerations, lymphopathia venereum, skin diseases of the tropics, helminth infections, nutritional diseases, anemias, snake bites, and rabies, together with a complete index of the book. These chapters are of comparable excellence to those in the preliminary publication. The chapters on hookworm, filariasis, and nutritional diseases are exceptionally well done and the chapter on snake bite includes an excellent table of classification of snakes, and a colored plate of poisonous snakes of India.

As a complete work on tropical diseases of medium length by a single author, this work will stand very high in medical literature, and can be recommended as an essential volume in every medical and public health library, and as a textbook for students and practitioners. In the preparation of the American volume the publishers have employed lithograph plates of the



Calcutta portion in which a few revisions have been incorporated in order to bring the work up-to-date. The American portion of the book is produced in identical type so that the work is a uniform production of printing.

HENRY E. MELENEY

**Rehabilitation, Its Principles and Practice**—By John Eisele Davis, M.A., Sc.D., Veterans Administration Facility, Perry Point, Maryland. (rev. and enl. ed.) New York: Barnes and Company, 1946. 264 pp. Price, \$3.00.

The revised edition of this book carries a slightly altered title and contains some forty new pages of material on the treatment of war neuroses. There are also some minor additions in the sections on alcoholism and on psychological testing. The balance is essentially a reprinting of the 1943 edition.

This book is a scholarly, technical, at times highly abstract, reference book, concerned mainly with the theoretical background of rehabilitation therapy. It is profusely documented with references and quotations from the literature of psychiatry, psychoanalysis, psychology, and recreational and occupational therapy which relate to this subject.

The main purpose of the book is to provide an unbiased review of the prevailing approaches to rehabilitation work with psychotic and psychoneurotic patients during acute and convalescent stages of illness. This specialized focus on the institutional level of therapy, which is incidentally not implied in the title, falls short of meeting the needs of those who are engaged in rehabilitation work on a community level with veterans and others having mental and emotional handicaps of a less serious nature.

With this rather important qualification as to its practical usefulness, the book can be recommended as the most

comprehensive and authoritative review of the technical formulations upon which any program for the rehabilitation of mentally and emotionally handicapped individuals must be constructed.

LEONARD E. HIMLER

**Studies on Brazilian Anophelines from Northeast and Amazon Regions**—By O. R. Causey, L. M. Deane and M. P. Deane. *American Journal of Hygiene Monograph Series*, No. 18. Baltimore: Johns Hopkins, 1946. 49 pp., 20 plates. Price, \$1.10.

This volume consists of three separate keys for the identification of thirty-odd Brazilian anopheline mosquitoes based on adult female, male genitalic and larval characteristics. These, together with a previously published (*American Journal of Hygiene*, 39:1-7, 1944) key to the eggs of most of these same species, represent the quintessence of a prodigious and exacting labor in the jungles of Brazil. The eggs secured during more than 50,000 isolated ovipositions of identified female anophelines were reared to adult mosquitoes. This "pedigreed" material made possible the precise correlation of egg, larval, and adult female characteristics used in species recognition, with the specific distinctions displayed by the structure of male genitalia. These last are generally held to be the most dependable criteria for anopheline speciation.

The key characteristics are illustrated bountifully and well by line drawings except in the case of those derived from male genitalia. Most of these are shown as photomicrographs. Acknowledging the excellence and authenticity of these representations, it is suggested that well executed line drawings might have portrayed with greater clarity the modal characteristics for each species manifested by male genitalic structures.

The keys are preceded by a brief dis-

cussion of the relative importance as malaria vectors of the anophelines described. Information as to their geographic and ecologic distribution is given also. The volume is beautifully printed. JUSTIN M. ANDREWS

**Water Treatment and Purification**—By William J. Ryan. (2nd ed.) New York: McGraw-Hill, 1946. 270 pp. Price, \$2.75.

The second edition of this descriptive presentation of the several processes and methods of water purification and treatment includes the major developments in this field since the first edition was published in 1937.

Although the preface indicates that this book has been prepared for the use of technical men, the description and simplified treatment of the subject matter will recommend it to the interested general reader. The engineer concerned with design or operation problems will find it necessary to supplement the condensed presentation of the text by the use of the well selected bibliographies to be found at the chapter endings.

The subjects of water softening and boiler water treatment are described in considerably more detail than are the treatments used in preparing water for domestic use, indicating the mechanical rather than the sanitary engineering approach to the subject. For this reason the book will be of greater interest to persons in industrial activities than to those engaged in public health work. EARNEST BOYCE

**Women in Industry**—By Anna M. Baetjer, Sc.D. Philadelphia: Saunders, 1946. 344 pp. Price, \$4.00.

It is most unfortunate that this book was not written before the recent war instead of after, since it contains the answers to practically all of the questions faced by industrial physicians, personnel directors, and others

in whose plants women were being employed in production work for the first time. Since in "normal" times some 11,000,000 women may be gainfully employed, the value of this book is not limited to periods of emergency.

Dr. Baetjer is to be heartily commended for "debunking" some of the commonly accepted but unfounded notions in regard to the susceptibility of women to occupational diseases and in regard to the handling of employees who become pregnant. Her book accomplishes two major purposes: it assembles in one place a great mass of data relating to the employment of women, but it also points out the many gaps in existing information. Investigators in search of a problem will find many ideas in this book.

LEONARD J. GOLDWATER

**Personal Hygiene Applied**—By Jesse Feiring Williams, M.D., Sc.D. (8th rev. ed.) Philadelphia: Saunders, 1946. 531 pp. Price, \$2.50.

An author rarely has the opportunity to guide his book through eight revisions covering almost a quarter century of progress in his special field. Dr. Williams, now Emeritus Professor of Physical Education, Columbia University, is to be congratulated upon this unusual privilege. The first edition of his college textbook appeared in 1922. By comparing the content of the first with the eighth edition it has been possible to note where most progress in the field has been made and where changes in emphasis have occurred.

Dr. Williams's belief in hygiene as a way "to live most and serve best" has not faltered with the years. His emphasis on posture and big muscle activity as a way to health has diminished. The chapters, "Food and Nutrition" and "Prevention of Specific Diseases" have prospered most over the years. The latter chapter is outstanding and one wishes that it

might have been enlarged to include community organization for personal health. A new chapter, "Man and His Behavior," adds a note on mental hygiene but its message could have been stronger if it had been combined with the chapter, "Nerves and Emotions," and if more recent references in this field had been included. Certain inaccuracies in the discussion of colds and tuberculosis in the chapter, "Air, Respiration and Health," might have been avoided if these subjects had been approached via Prevention of Specific Diseases. The author attacks the use of tobacco, alcohol, and patent medicines with his usual vehemence.

Usefulness of the book as a text is enhanced by inclusion of "Questions and Exercises" and "Selected Readings" at the end of each chapter and by the "Suggested List of Topics for a Term Paper" (Appendix A). Diagrams and charts are also useful to this purpose while the pictures of sports activities add little. The book will continue its long usefulness as a college text until the hoped-for day when the high school student is taught personal hygiene and the college student is prepared to study community organization for public health.

CHARLES E. SHEPARD

**Textbook of Bacteriology**—By Edwin O. Jordan, Ph.D., and William Burrows, Ph.D. (14th ed.) Philadelphia: Saunders, 1946. 909 pp. Price, \$7.00.

This textbook grows more complete and comprehensive with each printing. As in the previous edition, certain sections are rewritten rather than revised, including those dealing with Asiatic cholera, virus diseases, especially influenza and encephalitis, the pleuropneumonia group of microorganisms, the antigenic structure of *Salmonella*, and rickettsial diseases. Entirely new, and excellent, sections on medical

mycology and parasitology replace chapters previously devoted to these subjects, and new sections are added on respiratory enzymes, antibiotics, sulfonamides, iso-agglutinins and antibodies, pinta, primary atypical pneumonia, postvaccination hepatitis, and epidemic kerato-conjunctivitis.

The volume is attractively printed on excellent stock and generously illustrated, largely with new and original photographs and drawings, a few in color.

The coverage of each subject is admirably adapted to the needs of college, university, and medical students for whom this will continue to be a standard text.

EDMUND K. KLINE

**Poisons—Their Properties, Chemical Identification, Symptoms and Emergency Treatment**—By Vincent J. Brookes and Hubert N. Alyea. New York: D. Van Nostrand Co., Inc., 1946. 209 pp. Price, \$3.00.

With a minimum of technical language, some 90 of the more common poisons, alphabetically arranged, are discussed under the particular headings of general information concerning the poison itself; identification by chemical means; the symptoms caused or developed, that is, identification of the poison by means of the physiological response induced; and the emergency treatment or first-aid to be rendered. The first, third, and fourth headings are also summarized in tabular form. The physiological effects and the permissible working concentration of about 70 more compounds which may be industrial hazards are briefly described. An introductory chapter is devoted to factors to be noted in making a poison investigation and another deals with basic information concerning poisons and poisoning such as their classification by symptoms and general emergency treatment as in the use of emetics and antidotes. A small section is devoted to

poisoning from foods, plants, snakes, and spiders, and, in addition, artificial respiration, the gas mask, the inhalator, and treatment for shock are briefly discussed.

This book contains useful information presented in a systematic manner which should prove to be valuable to police and peace officers, particularly, and also to food and drug inspectors, industrial hygienists, pharmacists, nurses, and physicians. Some chemists may also find the book useful. It has an appendix which includes a glossary and several practical tables of measurement. A very few typographical errors noticed show care in proof reading and the large bold type used for captions for the poisons discussed should prove helpful in finding a reference. This text is a good book to have around.

MORRIS B. JACOBS

**Nursing in Commerce and Industry**—By *Bethel J. McGrath, R.N.* New York: *The Commonwealth Fund*, 1946. 356 pp. Price, \$3.00.

Benefiting from experience accumulated during the war years, this work brings to the industrial medical literature an accurate and complete appraisal of the limitless opportunities presented to the nurse in industry. The entirety of this specialized field is drawn against a background descriptive of the concepts of modern business and the full program that has become medical care in industry.

The particular problems of employee relations, the worker's environment, industrial accidents and health hazards, nutrition, mental hygiene, and nursing records are covered from the viewpoint of practical application, and in this practicality lies the value of the book. The author is acutely aware of current conditions in the medical departments of industry, and conveys this understanding to the reader in a clear, attractive style. The sections on "Prob-

lems Peculiar to Women in Industry" and "Workmen's Compensation" are approached realistically, and the material on health promotion and orientation of the new employee is pithy and to the point. The space requirements of industrial cafeterias, so well delineated, are valuable criteria rarely found in contemporary literature.

The author has not been consistent in her phraseology, using both the terms "pre-placement" and "pre-employment" physical examinations. The latter is distinctly not the choice of the industrial physician. The reviewer disagrees with the wisdom of the nurse conducting any procedure even suggestive of a pre-placement physical appraisal, and likewise with the topical administration of certain forms of chemotherapeutic agents, two procedures discussed in the publication. The terms "upper leg" and "lower leg" as anatomical designations should be stricken from an otherwise well written, well documented text. The references are accepted treatises, and are fairly current.

The book is recommended particularly for those nurses interested in an industrial career, and for those women now in industrial nursing who have not realized the rich potentialities, fascination, and rewards of the full health program now being executed in modern industry.

J. S. FELTON

**Aquatic Standards for Y.M.C.A. Camps**—By *Thomas Kirk Cureton, Jr., and Richard H. Pohndorf.* New York: *Association Press*, 1946. 74 pp. Price, \$.75.

While these standards have been developed for Y.M.C.A. camps, they are just as useful to any group interested in waterfront activities. They provide the answers to many questions for which standards do not exist or are hard to find, such as safe depth for bathing areas according to ability to swim, size

of area, bathing load, safe freeboard on a boat, construction of waterfront equipment, contents of first aid kit, etc. The volume includes working drawings of docks, control towers, and bathing areas, and examinations for those interested in supervising waterfront activities. The introduction asserts that these standards are attainable and must be attained for the well-being of the campers. In the reviewer's opinion many camps are operating safely with less than these standards provide.

HERBERT J. DUNSMORE

**Manson's Tropical Diseases—**  
*Edited by Philip H. Manson-Bahr, G.M.G., D.S.O., M.A., M.D., D.T.M., and H. Cantab, F.R.C.P. (Lond.). Baltimore: Williams & Wilkins, 1945. 1,068 pp. Price, \$12.00.*

This classic in tropical medicine has again been brought up-to-date in a field which has made great strides in the past few years. This volume includes discussions not only of the so-called tropical diseases but also the common world-wide diseases as they affect people in the tropics.

The emphasis of this book is one of diagnosis and treatment, and the author's wide experience and extensive use of current literature make it of greatest value in the practice of medicine. Through the discussions of various parasitic life cycles and epidemiology, the methods of prevention are briefly outlined.

A new and very useful section of "Tables of drugs for the treatment of tropical diseases" briefly summarizes the accepted drugs in use today. Structural chemical formulas are included which aid greatly in understanding relationships of the various drugs. Several inaccuracies are present in this summary, which make it advisable to go to the general text for details of therapy.

This volume has been kept relatively compact despite the profusion of good illustrations and the extensive field covered, and it remains a most useful and complete resource in the practice of tropical medicine.

HAROLD W. BROWN

**Public Health Nursing in Canada**  
*—By Florence H. M. Emory and others. Toronto: Macmillan, 1945. 554 pp., illus. Price, \$3.00.*

Written for Canadian public health nursing students, this book will also be of interest to teachers, students, and practitioners of public health nursing in the United States.

*Part I* discusses the principles and general practice of public health nursing in Canada. A wide range of topics is covered which means that all must be briefly discussed. The list of well selected references will guide readers in their search for further help on specific problems. *Chapter XV* on National Health Insurance is timely. Similarities to the situation in the United States stand out. *Part II* deals with methods and technical procedures in certain branches of public health nursing in Canada. To nurses in the United States the brief discussions of the development of certain services, such as visiting nursing and child hygiene, will be of special interest. The procedures and techniques are chiefly valuable for making possible a comparison between practices in the two countries. There are many similarities as one would expect.

To one schooled in the present "digest magazine" emphasis on brevity of words and sentences, the task of finding the central thought in some paragraphs will seem arduous. Certain changes in format would make the headings stand out more clearly and would assist the reader in gaining a quick grasp of the content.

ANNA FILLMORE

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**This You Must Read**—A distinguished committee has prepared a brief primer on poliomyelitis and its treatment. Whatever your job may be in public health you will want to know the latest about the disease that, more than any other, creates widespread apprehension. The primer ends with the reminder that polio patients are not cured, they recover and we can only assist in that recovery to make it as complete and perfect as possible.

ANON. Infantile Paralysis, or Acute Poliomyelitis. J.A.M.A. 131, 17:1411 (Aug. 24), 1946.

**Hats Off for This One!**—Metropolitan Baltimore is going about the saving of premature infant lives in a big way. Fire department ambulances will transport the preemies to a new hospital ward. Heated, oxygenated carrying trunks are provided and nurses and attendants will be taught what to do. Pray that other cities will do likewise.

ANON. Fire Department Ambulances Transport Premature Infants to New Hospital Ward. Baltimore Health News. 23, 8:53 (Aug.), 1946.

**Diphtheria Is Preventable**—Diphtheria increases, and there seems to be a tendency for the disease to become relatively more prevalent among older age groups.

ANON. Diphtheria Mortality in Large Cities in the United States in 1945. J.A.M.A. 131, 31:1053 (July 27), 1946.

**Medical Care**—You may experience a pleasant glow just to see an editorial in a medical journal (British) in which social medicine is discussed without heat. There is no billingsgate,

no use of fighting words, just an unemotional reporting of the slow progress of the National Health Service Bill through the legislative mill. In an accompanying supplement, the changes are reported in detail.

ANON. The Committee Stage. Brit. M. J. No. 4463, p. 91 (July 20), 1946.

**About Cancer and Your State**—How is your state-wide cancer control program progressing? This account presents the status of the work, if any, in each state last year and tells what a competent committee thinks should be done. Though there are heartening accomplishments here and there, the record as a whole is something this wealthy nation should weep over.

ANON. Cancer Facilities and Service. J. Nat. Cancer Inst. 6, 5:239 (Apr.), 1946.

**Under Which Auspices?**—To clear the air a committee has worked out a set of principles—nine of them—designed to improved public health nursing in rural communities and small and large cities. This courageous attempt may cause pain to some sacred cows but even that may do good in the end.

ANON. Desirable Organization of Public Health Nursing for Family Service. Pub. Health Nurs. 38, 8:387 (Aug.), 1946.

**Doing Better Now-a-days**—When the returns are all in, this writer predicts it will be found that the influences of war on industrial health have been as great as, if not greater than, other public health programs. He discusses the advances, both technical and social. In World War I, there were 230 fatalities per billion pounds of explosives manufactured. In the second war

only 5 fatalities per billion pounds were reported. This is a sample of the interesting facts and ideas awaiting you in this paper.

BLOOMFIELD, J. J. Technical and Social Advances in Industrial Health. *Occup. Med.* 1, 5:443 (May), 1946.

**Vitamins and Morale—**Count the day not lost when you learn a new word. This conspectus (summary to you) retells the story of the California factory workers who lived on a diet low in colored vegetables, citrous fruits, and tomatoes. They did better in respect to milk and eggs and met the requirements for meat. Half were given a placebo, and half a vitamin supplement. Absenteeism, turnover and performance rates seem to indicate that the super-vitamed group enjoyed a slightly superior industrial morale. There is a lot more that you must interpret for yourself.

BORSOOK, H., and WILHL, D. G. Nutritional Status of Aircraft Workers in Southern California. A Conspectus of the Survey and Its Field. *Milbank Quart.* 24, 3:251 (July), 1946.

**Keep Up-to-Date—**For non-medical health workers this excellent review of the newer analgesics, anesthetics, anti-infectives, vaccines, vitamins, and hormones should be required reading.

CUTTING, W. C. The Newer Drugs. *Am. J. Nurs.* 46, 8:513 (Aug.), 1946.

**Know-It-Alls Needn't Bother—**Are you in doubt about the latest in diphtheria, scarlet fever, tetanus, pertussis, typhoid, smallpox, influenza, and rabies immunization? If you are not letter perfect then read this excellent review for every health worker should achieve that degree of information about his craft.

EDSALL, G. Active Immunization. *New England J. Med.* 235, 8:256 (Aug. 22), 1946.

**This Saves Babies—**Combined vac-

cination does not decrease the prophylactic value of the diphtheria toxoid and offers a very good protection against whooping cough. After a wide-scale trial this Canadian health officer feels justified in extending the service to all infants in the Province.

FOLEY, A. R. A Three Year Experiment with Combined Diphtheria Toxoid—Pertussis Vaccine. *Canad. Pub. Health J.* 37, 7:259 (July), 1946.

**While Research Goes On—**Of the 182,000 infectious syphilitics reported last year, 52,000 were treated in 59 rapid treatment centers in 37 states. Experience gained in these centers suggests definite merit in the treatment of early syphilis with penicillin, using arsenicals and bismuth as adjuncts. There are fewer relapses when the adjuncts are included.

HELLER, J. R., JR. The Rapid Treatment Center Program. *Am. J. Nurs.* 46, 8:542 (Aug.), 1946.

**Healthful Work—**In still another new scientific journal a broad view is taken of the work of the health educator in industry. Industrial health cannot be divorced from the public health program, and industrial health involves more than putting up posters in factories. Psychologic problems in industrial life, vocational guidance, education of new workers, effective tie-up of the hygiene of home and work-place are some of the goals of industrial health.

GALDSTON, I., *et al.* Symposium on Health Education in Industry. *Occup. Med.* 1, 5:471 (May), 1946.

**For Each His Own Job—**Lest long-tenure members of the health agency staff fear that the newly appointed health educator will tread on vulnerable toes, some of the non-competitive activities of that misunderstood functionary are set forth. It's true that each health worker is a health educator betimes, but the designated

health educator is a community rather than an individual teacher. There is plenty of work for all.

LIFSON, S. S., and WILSON, A. B. Health Education in the Health Department. Pub. Health Nurs. 38, 8:421 (Aug.), 1946.

From Ticks with *Rickettsia Burneti*—An entire issue of one of our more obese scientific journals is given over to Q fever. There are 181 pages of text. As I possessed—before the magazine reached my desk—what little information I'll ever need about this new disease, I can report to you only the place in which you'll find the valuable papers, all twelve of them.

ROBBINS, F. C., *et al.* Q Fever. Am. J. Hyg. 44, 1:1 (July), 1946.

Back to Demographic Normalcy?—Chiefly responsible for our step-up in population growth during the recent war years was our increased fertility. Although we indulged in no such balderdash as did the leaders of the axis

countries, it is possible that some of our war expedients may not have been without some effect on our baby boom. Family allowances for soldiers, EMIC, nursery schools, and emergency feeding programs all may have helped produce more infants. It is not easy to assess their carry-over.

TAEUBER, C. Wartime Population Changes in the United States. Milbank Quart. 24, 3:235 (July), 1946.

Old Cheese May Be Dangerous Too—Following a food poisoning outbreak caused by infected cheddar cheese, it was found that an aging period of as long as forty-three weeks would not have rendered the cheese safe for consumption, for the salmonella organism could be recovered from a sample after protracted storage. Pasteurization must be insisted upon: aging isn't enough.

TUCKER, C. B., *et al.* *Salmonella typhimurium* Food Infection from Colby Cheese. J.A.M.A. 131, 14:1119 (Aug. 3), 1946.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

A B C OF MEDICAL TREATMENT. By E. Noble Chamberlain. New York Oxford University Press, 1946. 206 pp. Price, \$3.00.

THE AMERICAN HOSPITAL. By E. H. L. Corwin, Ph.D. New York: The Commonwealth Fund, 1946. 226 pp. Price, \$1.50.

BETTER HOSPITAL CARE FOR THE AMBULANT PATIENT (Report of the Special Committee on Hospital Clinic Service). Harrisburg, Pa.: The Hospital Association of Pennsylvania, 1946. 184 pp. Price, \$1.50 for 1-10 copies; \$1.25 for 10 or more.

THE CHALLENGE OF POLIO. By Roland H. Berg. New York: The Dial Press, 1946. 208 pp. Price, \$2.50.

ESSENTIALS OF PEDIATRICS (4th Ed.). By Philip C. Jeans, A.B., M.D., Winifred Rand, A.B., R.N., and Florence G. Blake, R.N., M.A. Philadelphia: Lippincott, 1946. 627 pp. 86 illus. Price, \$3.50.

EYE HEALTH—A TEACHING HANDBOOK FOR NURSES (Publication No. 447). New York: The National Society for the Prevention of Blindness, Inc., 1946. 108 pp. Price, \$.60.

FOOD CONTROL AND NUTRITION SURVEYS, MALABAR AND S. KANARA. By K. G. Sivaswamy, V. R. Nayanar, Dr. R. G. Kakade and L. N. Rao. Royapettah, Madras: Servindia Kerala Relief Centre, 1946. 225 pp. 7 illus. Price, \$1.20.

GENERAL BIOLOGY (3rd Ed.). By William C. Beaver, Ph.D. St. Louis: Mosby, 1946. 820 pp. Price, \$4.75.

INADEQUATE DIETS, DEATHS AND DISEASES AND A FOOD PLAN FOR MADRAS. By K. G. Sivaswamy. Royapettah, Madras: Servants of India Society, 1946. 84 pp. Price, \$.60.

INDUSTRIAL TOXICOLOGY. By Alice Hamilton and Rutherford T. Johnstone. New



- York: Oxford University Press, 1945. 72 pp. Price, \$3.50.
- INSECT MICROBIOLOGY. By Edward A. Steinhäus, Ithaca: Comstock Publishing Co., 1946. 763 pp. Price, \$7.75.
- INSIGHT AND PERSONALITY ADJUSTMENT. By Therese Benedek, M.D. New York: The Ronald Press, 1946. 307 pp. Price, \$4.00.
- JEROME CARDAN. By James Eckman. Baltimore: Johns Hopkins Press, 1946. 120 pp. Price, \$2.00.
- Lectures on Preventive Medicine. By Harvey Sutton. Sidney, Australia: Consolidated Press, Ltd., 1944. 658 pp.
- THE LIMITATIONS OF OPTICAL IMAGE FORMATION (Annals of The New York Academy of Sciences, Vol. XLVIII, Art. 1. Pages 1-30). By Max Herzberger. New York: New York Academy of Sciences, 1946. 30 pp.
- MARITAL COUNSELLING—WITH SPECIAL REFERENCE TO FRIGIDITY. By Paul Popenoe, Sc.D. Los Angeles: The American Institute of Family Relations, 1945. 19 pp. Price, \$35.
- MEDICAL CARE INSURANCE—A SOCIAL INSURANCE PROGRAM FOR PERSONAL HEALTH SERVICES. (Report from the Bureau of Research and Statistics Social Security Board to the Committee on Education and Labor, U. S. Senate.) Washington: Gov. Ptg. Office, 1946. 185 pp.
- MODERN DEVELOPMENT OF CHEMOTHERAPY (Monographs on the Progress of Research in Holland). By E. Havinga, H. W. Julius, H. Veldstra and K. C. Winkler. New York: Elsevier Publishing Company, Inc., 1946. 175 pp. Price, \$3.50.
- MUSIC IN HOSPITALS. By Willem van de Wall. New York: Russell Sage Foundation, 1946. 86 pp. Price, \$1.00.
- NEW WORLDS IN MEDICINE. Edited by Harold Ward. New York: Robert M. McBride & Co., 1946. 707 pp. Price, \$5.00.
- NON-PROJECTIVE PERSONALITY TESTS (Annals of The New York Academy of Sciences, Vol. XLVI, Art. 7. Pages 531-678). New York: New York Academy of Sciences, 1946.
- NOT BY BREAD ALONE. By Vilhjalmur Stefansson. New York: Macmillan, 1946. 339 pp. Price, \$3.50.
- OCCUPATIONAL OUTLOOK INFORMATION. RE-TRAINING AND REEMPLOYMENT ADMINISTRATION, U. S. Department of Labor. Washington: Gov. Ptg. Office, 1946. 6 pp.
- OUR ENEMY THE STATE. Albert Jay Nock. Caldwell, Ida.: Caxton Printers, Ltd., 1946. 209 pp. Price, \$2.50.
- PROCEEDINGS AND PAPERS OF THE 14TH ANNUAL CONFERENCE OF THE CALIFORNIA MOSQUITO CONTROL ASSOCIATION. Edited by Harold Farnsworth Gray. Berkeley, Calif.: California Mosquito Control Association, 1946. 115 pp. Price, \$1.50.
- THE PSYCHOLOGY OF ADOLESCENCE. By Karl C. Garrison. New York: Prentice-Hall, Inc., 1945. 477 pp. Price, \$3.50 text ed., \$4.60 trade ed.
- PSYCHOTHERAPY IN GENERAL MEDICINE. By Geddes Smith. New York: Commonwealth Fund, 1946. 38 pp. Price, \$25. Free to medical schools, medical societies and public agencies.
- RELIEF AND SOCIAL SECURITY. By Lewis Meriam. Washington: Brookings Institution, 1946. 912 pp. Price, \$5.00.
- RUMBOS DE POLITICA SANITARIA. By Carlos Enrique Paz Soldan. Lima: Publicaciones del Instituto de Medicina Social, 1946. 382 pp.
- SEX, MARRIAGE AND FAMILY. By Thurman B. Rice, A.M., M.D. Philadelphia: Lipincott, 1946. 272 pp. Price, \$2.50.
- SHOOTING THE BOW. By Larry C. Whiffen. Milwaukee: Bruce Publishing Co., 1946. 83 pp. Price, \$2.00.
- SIN AND SCIENCE. By Dyson Carter. New York: Heck-Cattell Publishing Co., 1946. 216 pp. Price, \$2.50.
- SIXTEENTH CENSUS OF THE UNITED STATES: 1940 UNITED STATES LIFE TABLES AND ACTUARIAL TABLES, 1939-1941. By Thomas N. E. Greville. Washington: Gov. Ptg. Office, 1946. 153 pp. Price, \$1.25.
- TOWARD MENTAL HEALTH (Public Affairs Committee Pamphlet No. 120). New York: Public Affairs Committee, Inc., 1946. 32 pp. Price, \$10.
- YOUR COMMUNITY AND ITS YOUNG PEOPLE—Their Employment and Educational Opportunities (Publication No. 316). Prepared by Interagency Committee on Youth Employment and Education. Washington: Gov. Ptg. Office, 1946. 31 pp.

# The 74th Annual Meeting

THE preliminary program of the scientific sessions of the Association from Tuesday, November 12, to November 14, inclusive, and of its related organizations on Monday, November 11, published in this issue, tells only part of the story of the 74th Annual Meeting in Cleveland. There is, of course, the audience to consider. Delegates from every state, from Canada, from South of the Border, and from many countries outside the Western Hemisphere will attend. Members of the Association, invited in a recent *News Letter* to guess the registered attendance, have filed estimates ranging from 2,657 to 10,862. The closest guesser gets a prize.

For these thousands of professional public health workers coming to Cleveland for a common purpose, the Local Committee under the leadership of the Health Commissioner, Dr. Harold J. Knapp, has made careful preparation.

## SCIENTIFIC TRIPS

A number of inspection trips to places and projects of interest to the various Sections have been planned. They include visits to the water purification plants and the sewage disposal plants, to the Cleveland Health Museum and to the Nela Park Lighting Laboratories. The extent of the scientific program has made it necessary to limit the aims and ambitions of the Committee on Scientific Trips, of which Mr. Howard Whipple Green is Chairman. There is simply not enough time available to do all the interesting things Mr. Green's Committee generously offered.

## ENTERTAINMENT

The Entertainment Committee, Mrs. David K. Ford, Chairman, is not an-

nouncing its program in advance. Delegates will see and appreciate its efforts during the days and evenings of the Convention.

## SCIENTIFIC EXHIBITS

More scientific exhibit space has been allocated this year than ever before. Twenty-five booths have been set aside for Cleveland exhibits and the assembly of the local participants is under the supervision of Dr. Bruno Gebhard. Fifty booths have been ticketed for national agencies, official and private, and their disposition has been the responsibility of a committee working under the Chairmanship of Dr. Franklin M. Foote. A partial list of scientific exhibitors follows:

American Dental Association  
American Medical Association  
Baruch Committee on Physical Medicine  
Committee on Census Enumeration Areas of the American Statistical Association  
Health Institute of the UAW-CIO  
Institute of Inter-American Affairs  
National Conference for Cooperation in Health Education  
National Foundation for Infantile Paralysis  
National Institute of Health  
National Organization for Public Health Nursing  
National Sanitation Foundation  
National Society for the Prevention of Blindness  
New Jersey State Department of Health  
New York City Department of Health  
New York State Department of Health  
Office of the Surgeon General, Preventive Medicine Division  
U. S. Public Health Service

## THE TECHNICAL EXHIBIT

The *Journal* has carried for several months a Directory of Technical Exhibitors at Cleveland. It is in this issue as well at the back. Many of the exhibitors need no introduction to Asso-

ciation members. There are a few appearing for the first time at an Annual Meeting. Delegates examining the scientific program with an eye to the best expenditure of their time are reminded that the technical exhibit is full of information, too, and time should be blocked out for its careful inspection.

#### MOTION PICTURES

The Motion Picture Theater will be in continuous operation from Tuesday morning, November 12, beginning at 9:30 until 4:30 p.m. on Thursday. Mr. Thomas Stowell will be in charge. With the assistance of Mrs. Ethel Files and Mr. Adolph Scherer, Mr. Stowell will show more than fifty health films.

#### HEALTH EDUCATION AND PUBLICITY HEADQUARTERS

Conducted by the National Publicity Council for Health and Welfare Services, Mrs. Sallie Bright, Director, and Miss Katherine Emig, Assistant Director, this popular center for the examination of health education materials of all kinds and for advice upon all manner of health education problems is being developed around the central themes of the program. The results should extend the value of the papers presented before the Health Education Section.

#### MERIT SYSTEM UNIT

In addition to the program being sponsored on Tuesday afternoon by the Merit System Unit, a consultation booth will be maintained and, throughout the meeting, members of the A.P.H.A. Merit System Unit staff will be on hand for conferences with persons concerned with recruiting and examining personnel for public health. Objective type examinations for professional classes of positions in administrative public health, environmental sanitation and public health engineering, public health nursing, laboratory work, health education, medical

social work, nutrition, and vital statistics have been developed by the Merit System Unit. Samples of examinations which have been administered in various states and statistical analyses of the results will be on display.

#### VOCATIONAL COUNSELING AND PLACEMENT SERVICE

Next to the Merit System Unit's consultation center will be found a similar refuge where those who need personnel and those who are seeking appointment to positions in public health may find real assistance and concrete leads. Dr. F. W. Racker, Vocational Counsellor attached to the A.P.H.A. staff through the coöperation of the U. S. Public Health Service, will be on hand to match jobs with applicants and employers with employees.

#### CONVENTION HEADQUARTERS

The Municipal Auditorium is Convention headquarters. The Registration Desk will be located in the Arena, and here also will be the exhibits, the Motion Picture Theater, Health Education and Publicity Headquarters, Merit System Unit and Vocational Counseling Centers, and the offices of the Association and the Local Committee. All scientific meetings will be held in the Auditorium, except the very few otherwise noted in the program.

#### REGISTRATION

Registration Headquarters will open at 9:30 a.m. on Monday, November 11. The registration fee established by the Executive Board is \$2 for members and \$3 for non-members. The usual exemptions for wives, dependent members of families, and students will maintain.

#### HOTELS

The *Journal* carries this month as in August and September a list of the hotels which have guaranteed rooms

for the period of the 74th Annual Meeting. Double rooms are much easier to secure than single rooms, and the hotels request that this fact be emphasized to the members. Room guarantees, except in the case of the Hotel Statler, are far from exhausted.

Delegates experiencing any difficulty in securing accommodations, are urged to write or wire Mr. Ed Brennan, Cleveland Convention and Visitors' Bureau, 511 Terminal Tower, Cleveland, Ohio, who is in charge of the Housing Bureau.

### PRESENTATION OF THE LASKER AWARDS FOR 1946

The newspapers throughout the country in late September publicized the fact that the American Public Health Association will offer a series of annual awards for outstanding contributions in the fields of medical research and public health administration. The comments of Dr. George Baehr, Chairman of the Association's Committee on Awards, on the need for medical research in the battle against disease were widely quoted.

These awards were offered to the Association by the Albert and Mary Lasker Foundation. The members of the Association were informed through an editorial in the June *Journal*. The Fellows were given the opportunity to make nominations for the consideration of the committee.

Three awards of \$1,000 each are being offered for outstanding contributions to research related to diseases which are the most frequent causes of death and disability. Another, also for \$1,000, is for an outstanding contribution in the field of public health administration. A special award of \$2,500 will be made for an especially important contribution in either field.

An "Oscar" consisting of a bronze statuette of the classical Winged Victory, symbolizing a victory in the fight against disease and death, will accompany each of the cash awards.

Winners will be announced in about six weeks. The presentation of the Lasker Awards for 1946 will take place at the Banquet Session during the 74th

Annual Meeting in Cleveland, November 12-14.

Dr. Baehr has pointed out that as a natural result of the steady lengthening of the human life-span through increased scientific knowledge and improved sanitation, the importance of diseases which occur most conspicuously in the middle and later years of life is increased. Examples of these are diseases of the heart and arteries, cancer, arthritis, and kidney diseases, which are all at the top of the list of the causes of death and disability in the United States.

It is in the hope of stimulating greater professional attention and public interest in these ailments that these Lasker Awards are being offered.

Members of the Lasker Awards Committee are:

Dr. George Baehr, President, New York Academy of Medicine

Dr. Thomas Francis, Professor of Epidemiology, School of Public Health, University of Michigan

Dr. Hugh R. Leavell, Rockefeller Foundation, New York City

Dr. Robert F. Loeb, Professor of Medicine, College of Physicians and Surgeons, Columbia University

Dr. Karl F. Meyer, Director, Hooper Foundation, University of California

Dr. Thomas Parran, Surgeon General, U. S. Public Health Service

Dr. Alfred N. Richards, Professor of Pharmacology, University of Pennsylvania

Dr. Ernest L. Stebbins, Professor of Public Health Administration, Johns Hopkins University

Dr. James S. Simmons, Director, School of Public Health, Harvard University

Preliminary Program of the Scientific Sessions of the  
74th Annual Meeting of the American Public Health  
Association and Meetings of Related Organizations  
Cleveland, Ohio, November 11-14, 1946

THE Annual Meeting Program Committee offers a preview of the content of scientific sessions planned in connection with the 74th Annual Meeting in Cleveland, Ohio. The professional affiliations and addresses of speakers are not given, but a complete index to participants will be published in the final program which will be distributed to all delegates at the Registration Desk, Auditorium. Registration headquarters will be opened at 9:30 A.M. on Monday, November 11.

MONDAY MEETINGS

AMERICAN PUBLIC HEALTH ASSOCIATION  
GOVERNING COUNCIL

Monday, 2:30 P.M. *First Meeting—Pine Room, Hotel Statler*

AMERICAN SCHOOL HEALTH ASSOCIATION

Monday, 9:30 A.M. *First General Session—Room A, Auditorium*

*Presiding:* S. B. McPHEETERS, M.D.

Improving Dental Health Through Intensive Education. DONALD  
GOUDEY, D D S.

Health Clinic Rooms in School Buildings. HELEN CARY, M.D.

Anemia in School Children—Summary of 14,000 Hemoglobin Tests  
in 15 States. RUTH BLAKELY.

Research Report of Child Health Needs and Interests on Which to  
Revise Health Instruction in the Denver Schools. ARTHUR LEWIS.

The Health Coördinator's Functions and Duties at the Secondary  
School Level. C. MORLEY SELLERY, M.D.

Monday, 2:30 P.M. *Second General Session—Room A, Auditorium*

*Presiding:* S. B. McPHEETERS, M.D., and HELEN CARY, M.D.

Twelve Years of Tuberculosis Case Finding Among High School  
Pupils. W. E. AYLING, M.D.

Tuberculosis in the School Child. L. S. JORDAN, M.D.

Denver Area Rheumatic Fever Diagnostic Service—The 2000 Cases  
Studied in the First Two Years. BERNICE WEDUM, M.D.

## AMERICAN SCHOOL HEALTH ASSOCIATION (Cont.)

"Plus Sphere Test" to find cases of Farsightedness. DAVID VAN DER SLICE, M.D.

Some Observations on Malnutrition in the United States. WALTER WILKINS, M.D.

Monday, 6:30 P.M. *Dinner Session—Lattice Room, Hotel Statler*

*Presiding:* S. B. MCPHEETERS, M.D., and HELEN A. CARY, M.D.

*Presentation of the William A. Howe Award to:* JOHN E. BURKE, M.D., CHARLES H. KEENE, M.D., and JOHN SUNDWALL, M.D.

The Physician's Job in the School Health Program. JOHN E. BURKE, M.D.

The Responsibility of the Medical Profession for Child Development. CHARLES H. KEENE, M.D.

American School Health Association in Retrospect and Prospect. JOHN SUNDWALL, M.D.

## ASSOCIATION OF MATERNAL AND CHILD HEALTH DIRECTORS

Monday, 8:30 P.M. *Parlor 1, Hotel Statler*

ASSOCIATION OF RESERVE OFFICERS OF THE  
U. S. PUBLIC HEALTH SERVICE

Monday, 8:30 P.M. *Pine Room, Hotel Statler*

## CONFERENCE OF MUNICIPAL PUBLIC HEALTH ENGINEERS

Monday, 9:30 A.M. and 2:30 P.M. *Club Room A, Auditorium*

## CONFERENCE OF PROFESSORS OF PREVENTIVE MEDICINE

Monday, 9:30 A.M. and Luncheon Session—*Lattice Room, Hotel Statler*

## CONFERENCE OF STATE AND PROVINCIAL PUBLIC HEALTH LABORATORY DIRECTORS

Sunday, 9:30 A.M., 2:30 P.M., and 8:30 P.M. *Lattice Room, Hotel Statler*

Monday, 9:30 A.M., and 2:30 P.M. *Club Room C, Auditorium*

Monday, 8:30 P.M. *Room 345, Hotel Statler*

## CONFERENCE OF STATE DIRECTORS OF HEALTH EDUCATION

Monday, 9:30 A.M. and 2:30 P.M. *Tavern Room, Hotel Statler*

CONFERENCE OF STATE DIRECTORS OF PUBLIC  
HEALTH NURSING

Monday, 9:30 A.M. and 2:30 P.M. Room 341, Hotel Statler

## CONFERENCE OF STATE SANITARY ENGINEERS

Monday, 9:30 A.M. and 2:30 P.M. Room B, Auditorium

ENGINEERING SECTION, CONFERENCE OF STATE  
SANITARY ENGINEERS, AND CONFERENCE OF  
MUNICIPAL PUBLIC HEALTH ENGINEERS

*Annual Engineers' Stag Dinner, Euclid Ball Room, Hotel Statler*

Monday, 6:30 P.M.—“Bill” Orchard, Master of Ceremonies

## PUBLIC HEALTH CANCER ASSOCIATION

Monday, 9:30 A.M. Room C, Auditorium

*Presiding:* HERBERT L. LOMBARD, M.D.

Inheritance and Human Cancer. MADGE THURLOW MACKLIN, M.D.

The Changing Cancer Death Rate. EVELYN A. POTTER.

The Development of a Cancer Program in Missouri. EVERETT D. SUGARBAKER, M.D.

Health Maintenance Cancer Prevention Services. MILDRED W. S. SCHRAM, PH.D.

Cancer Education. EDMUND G. ZIMMERER, M.D.

Monday, 2:30 P.M. Room C, Auditorium

*Presiding:* MORTON L. LEVIN, M.D.

The Contribution of the Yale University School of Medicine to the Connecticut Cancer Program. MARY C. MACDONALD.

The Care of the Patient with Advanced Cancer. HILDA LARocca.

Public Health Service Activities in the Field of Cancer Control in the United States. LEONARD A. SCHEEL, M.D.

Program of the American Cancer Society: The Overall Strategic Plan. ASHLEY W. OUGHTERSON, M.D.

The Connecticut Cancer Record Registry. How It Functions. MATTHEW H. GRISWOLD, M.D.

Monday, 6:30 P.M. Dinner Session—Parlor C, Hotel Statler

PUBLIC HEALTH EDUCATION SECTION, AMERICAN  
PUBLIC HEALTH ASSOCIATION

*Pre-Conference Session—Hotel Statler*

Monday, 2:30 P.M.

Meetings of all Cross-Section Committees.

Committee on Post-war Planning in Public Health Education.  
*Chairman, MAYHEW DERRYBERRY, PH.D. Parlor F.*

Committee on Coördination of Public Health Education Section  
with All Other Sections of the A.P.H.A. *Chairman, MURIEL  
BLISS, PH.D. Parlor G.*

Committee on Utilization of Commercial Advertising for Health  
Education. *Chairman, ANN W. HAYNES. Parlor H.*

Committee on Problems in Cost Accounting. *Chairman, LEONA EAST  
CULP. Parlor K.*

Committee on Compensation of Public Health Workers. *Chairman,  
JAMES G. STONE. Parlor L.*

Committee on Public Health Movies. *Chairman, IRA V. HISCOCK,  
Sc.D. Parlor M.*

Monday, 8:30 P.M. *Parlor H—Hotel Statler*

An informal meeting for pre-conference planning of all Committee chairmen  
and members of the Section Council.

Guest: JOHN E. IVEY, PH.D.

SESSIONS FROM TUESDAY, NOVEMBER 12, TO  
THURSDAY, NOVEMBER 14, INCLUSIVE

TUESDAY, 8:00 A.M.

NATIONAL ADVISORY COUNCIL OF THE CLEVELAND  
HEALTH MUSEUM

*Breakfast Session—Cleveland Health Museum, 8911 Euclid Avenue*



TUESDAY, 9:30 A.M.

## LABORATORY

*First Session—Ball Room, Auditorium**Presiding:* WALTER L. MALLMANN, PH.D., *Chairman.**Section Business.**Committee Reports:*

The Coördinating Committee on Standard Methods. *Chairman,* A. PARKER HITCHENS, M.D.

The Standard Methods Committee on Diagnostic Procedures and Reagents. *Chairman,* WILLIAM D. STOVALL, M.D.

The Section Archivist. ANNA M. SEXTON.

Laboratory Technological Service Program of the Communicable Disease Center. SEWARD E. MILLER, M.D.

Cardiolipin and Purified Lecithin as Reagents in Syphilis Serology. AD HARRIS and JOHN F. MAHONEY, M.D.

Universal Serologic Reactivity with Lipid Antigens. Basis for "False Positives." REUBEN L. KAHN, Sc.D.

PANEL DISCUSSION OF STANDARD METHODS FOR ISOLATION  
OF THE GONOCOCCUS

*Presiding:* JUSTINA H. HILL, Sc.D.*Panel Leader:* CHARLES M. CARPENTER, M.D.

A Tri-Laboratory Analysis of Standard Methods and the Presentation of Investigations Pertaining to Them. C. LEROY EWING, THEODORE C. BUCK, JR., EMANUEL KAPLAN, Sc.D., RUDOLPHA CLARK TURNER, C. A. PERRY, Sc.D., ELIZABETH PETRAN, Ph.D., PATRICIA HAUGH, JUSTINA H. HILL, Sc.D., ELLEN NELL, and ADELAIDE MUELLER.

Procedures for the Transportation, Isolation and Identification of the Gonococcus as Employed by the Venereal Disease Research Laboratory and the New York City Department of Health. J. D. THAYER, Ph.D., and LENORE R. PEIZER.

Summary and Critique of Present Transportation Methods. RUSSELL STEIN.

Transportation of Specimens for Gonococcus Culture. NELL HIRSCHBERG, Ph.D., and MARION B. COLEMAN.

The Oxalate Salt of *p*-Aminodimethylaniline, An Improved Reagent for the Oxidase Test. CHARLES M. CARPENTER, M.D.

A Comparative Study of Media for the Primary Isolation of the Gonococcus. THOMAS H. WELLER, M.D.

Growth Requirements of the Gonococcus as Related to Diagnostic Isolation Procedures. CHARLES E. LANKFORD.

*Discussion by Panel Members and from the floor.*

TUESDAY, 9:30 A.M.

HEALTH OFFICERS

*First Session—Little Theatre, Auditorium*

*Presiding:* ROY L. CLEERE, M.D., *Chairman.*

*Section Business.*

ESSENTIALS OF GOOD STATE PUBLIC HEALTH ADMINISTRATION

*Panel Leader:* WILTON L. HALVERSON, M.D.

*Participants:*

GREGOIRE F. AMYOT, M.D.  
CHARLES F. BLANKENSHIP, M.D.  
CARL E. BUCK, DR.P.H.  
H. B. COTTRELL, M.D.  
VLADO GETTING, M.D.  
ROGER HEERING, M.D.  
HUGH ROBINS, M.D.  
CECIL A. Z. SHARP, M.D.

ENGINEERING SECTION, CONFERENCE OF STATE  
SANITARY ENGINEERS, AND CONFERENCE OF  
MUNICIPAL PUBLIC HEALTH ENGINEERS

*Joint Session—Club Room B, Auditorium*

*Presiding:* ALFRED H. FLETCHER.

Report of the Committee on Municipal Public Health Engineering.  
*Chairman,* LEONARD M. BOARD.

The Inauguration and Operation of Sanitary-Fill Method of Waste Disposal. LEWIS DODSON.

Report of the Committee on Coördination of Public Health Engineering Activities. *Chairman,* ROY J. MORTON.

*Discussion—*The Place of the Sanitarian in the Field of Public Health Engineering.

Leaders will be selected by actions taken in the Conference Meetings held on Monday.

PUBLIC HEALTH EDUCATION

*First Session—Room B, Auditorium*

*Presiding:* LUCY S. MORGAN, PH.D., *Chairman.*

*Section Business.*

Report of the Nominating Committee.

Report of the Section Council.

A Summary of Section Activities. REEA F. HARRIS.

TUESDAY, 9:30 A.M.

## PUBLIC HEALTH EDUCATION (Cont.)

The Membership Questionnaire Study. EUNICE TYLER, PH.D.

Articles for the Journal. CARL A. WILZBACH, M.D.

Suggestions for Improving the Section. J. LOUIS NEEF.

Section Objectives and Brochure for Membership. ALICE M. JOHNSON and BESS EXTON.

Reports of the Cross-Section Committees.

*Group questions and discussions.*

## FOOD AND NUTRITION

*First Session—Room A, Auditorium**Presiding:* C. G. KING, PH.D.*Section Business.*

## NUTRITION RESEARCH

Voluntary Studies of Human Nutrition Characterized by Low Caloric Intake. ANCEL KEYS, PH.D.

Observations on Severely Restricted Food Intakes Among European Prisoners and Civilians. HERBERT POLLACK, M.D.

An Appraisal of the Effects of Long-Continued Underfeeding in Experimental Animals. CLIVE MCCAY, PH.D.

The Problem of Working Toward an Ideal Intake of Calories and Specific Nutrients. FREDERICK J. STARE, M.D.

## EPIDEMIOLOGY

*First Session—Room C, Auditorium**Presiding:* CHARLES ARMSTRONG, M.D., *Chairman.**Section Business.*

Control of Venereal Diseases in Germany. MAJOR GENERAL M. C. STAYER and WILLIAM A. BRUMFIELD, JR., M.D.

Post-war Health in Southeastern Asia, and Its Importance. HENRY R. O'BRIEN, M.D.

Exotic Diseases Now Being Seen in Service Men. HOWARD B. SHOOKOFF, M.D., and WHEELAN D. SUTLIFE, M.D.

Experiences with Smallpox Introduced from the Orient, Puget Sound Area, 1946. WALVIN R. GIEDT, M.D.

Filariasis and Malaria. L. T. COGGESHALL, M.D.

A Review of Induction and Discharge Examinations for Tuberculosis in the Army. ESMOND R. LONG, M.D.

**TUESDAY, 9:30 A.M.**

**MATERNAL AND CHILD HEALTH**

*First Session—Club Room A, Auditorium*

*Presiding:* EDYTHE P. HERSHEY, M.D., *Chairman.*

*Section Business.*

The Use of Phillips' Hemoglobin Test in Rural Maternity Care.  
VIRGINIA HOWARD, M.D.

Alleged Mechanical Suffocation. Post-mortem Study of 200 Consecutive Cases Reported to the Office of the Chief Medical Examiner, City of New York, Borough of Queens. JACOB WERNE, M.D., and IRENE GARROW, M.D.

The Rh Factor in Maternal and Child Health. LOUIS K. DIAMOND, M.D.

An Evaluation of the Use of BCG in the Prevention of Tuberculosis in Infants and Children. MILTON I. LEVINE, M.D.

Mental Hygiene Problems in a Well Baby Clinic. PAUL V. LEMKAU, M.D., and MARCIA COOPER.

**DENTAL HEALTH**

*First Session—Club Room C, Auditorium*

*Presiding:* J. M. WISAN, D.D.S., *Chairman.*

*Section Business.*

**DENTAL HEALTH PROGRAMS**

The Council on Dental Health. ALLEN O. GRUEBBEL, D.D.S.

Twenty-five Years of Dental Care in North Carolina. ERNEST A. BRANCH, D.D.S.

The Dental Program of Sturgis, Michigan. FRED WERTHEIMER, D.D.S.

Simplified Basic Data for Dental Programs. JOHN W. KNOTSON, D.D.S.

A Dental Program in Industry. C. B. BRAY, D.D.S.

**TUESDAY, 2:30 P.M.**

**FOOD AND NUTRITION AND PUBLIC HEALTH  
EDUCATION SECTIONS**

*Joint Session—Little Theatre, Auditorium*

*Presiding:* MARIETTA EICHELBERGER, Ph.D., and LUCY S. MORGAN, Ph.D.

LEGISLATION IN THE INTERESTS OF BETTER NUTRITION—A DEMONSTRATION OF THE TECHNIQUES OF GROUP DYNAMICS

Summary by MAYHEW DERRYBERRY, Ph.D., for the Public Health Education Section.

RUSSELL M. WILDER, M.D., for the Food and Nutrition Section.

TUESDAY, 2:30 P.M.

HEALTH OFFICERS, EPIDEMIOLOGY, AND LABORATORY  
SECTIONS*Joint Session—Ball Room, Auditorium**Presiding:* ROY L. CLEERE, M.D., CHARLES ARMSTRONG, M.D., and WALTER L. MALLMANN, Ph.D.

## DIPHTHERIA

Foreign and Domestic Trends in Diphtheria. GAYLORD W. ANDERSON, M.D.

The Correlation of Laboratory and Clinical Evidence of Virulence of *C. Diphtheriae*. MARTIN FROBISHER, JR., D.Sc.

Observations on the Safety and Effectiveness of Multiple Antigen Preparations. Preliminary Report by Saginaw Study Advisory Committee. V. K. VOLK, M.D.

Present Recommendations Concerning Treatment and Prophylaxis of Diphtheria. FRANKLIN H. TOP, M.D.

Booster Doses for Schick Testing in Adults. RALPH E. WHEELER, M.D., and GEOFFREY EDSALL, M.D.

## LABORATORY

*Second Session—Club Room C, Auditorium*

(Concurrent with Joint Session of Health Officers, Epidemiology, and Laboratory Sections)

## Committee Reports:

The Standard Methods Committee for Frozen Desserts and Ingredients. *Chairman*, FRIEND LEE MICKLE, Sc.D.The Standard Methods Committee for Examination of Shellfish. *Chairman*, JAMES GIBBARD.An Epidemic of Diarrhea in a New-borne Nursery Caused by *Pseudomonas aeruginosa*. CHARLES A. HUNTER, Ph.D., and PAUL R. ENSIGN, M.D.Studies in *Streptococcus fecalis* Food Poisoning. LEON BUCHBINDER, Ph.D., ABRAHAM G. OSLER and GUSTAVE I. STEFFLN, Ph.D.

Microbiology of Spray-dried Whole Egg. II. Incidence and Types of Salmonella. MATHILDE SOLOWFY, Ph.D., VLERNON H. MCFARLANE, Ph.D., EARLE H. SPAULDING, Ph.D., and CECILIA CHERMERDA.

Investigations of the Swab-Rinse Technic for Examining Eating and Drinking Utensils. THEODORE C. BUCK, JR., LEON BUCHBINDER, Ph.D., PERCY M. PHELPS, RAYMOND V. STONE, D.V.M., and WALTER D. TIEDEMAN, M.C.E.

Comparative Studies on the Germicidal Efficiency of Cationic and Hypochlorite Sanitizing Agents. C. K. JOHNS, Ph.D.

TUESDAY, 2:30 P.M.

MERIT SYSTEM UNIT

*Lattice Room, Hotel Statler*

*Presiding:* WILLIAM P. SHEPARD, M.D.

1. 2:30-3:45

RECRUITMENT OF PUBLIC HEALTH PERSONNEL

Problems of Recruitment in Public Health. FRANZISKA W. RACKER, M.D.

The Adaptation of Modern Advertising Methods to the Recruitment of Professional Personnel. To be announced.

*Panel Discussion*

*Panel Leader:* WILLIAM P. SHEPARD, M.D.

*Participants:*

JAMES LLOYD BARRON, C.E.—Environmental Sanitation.  
MARJORIE T. BELLOWS—Vital Statistics.  
DOROTHY DEMING, R.N.—Public Health Nursing.  
EDMUND K. KLINE, DR.P.H.—Laboratory.  
WILLIAM P. SHEPARD, M.D.—Public Health Administration.  
CLAIR E. TURNER, DR.P.H.—Health Education.

2. 4:00-5:15

THE MERIT SYSTEM UNIT PROGRAM

A Report on Merit System Unit Experience with the Written Examination. LILLIAN D. LONG, PH.D., and ELIZABETH K. LAZO.

The Field Consultation Service of the Merit System Unit. CHARLES B. FRASHER.

*Panel Discussion*

*Panel Leader:* GORDON W. SEGER, DR.P.H.

*Participants:*

RUTH O. BLAKESLEE  
ROY A. DILLON  
CHARLES B. FRASHER  
ELIZABETH K. LAZO  
LILLIAN D. LONG, PH.D.  
RICHARD M. MATTOX  
DAN S. MOORE  
DOROTHY E. PIEZ  
DONALD F. SIMPSON

PUBLIC HEALTH NURSING

*First Session—Club Room B, Auditorium*

*Presiding:* HELENE B. BUKER, R.N., *Chairman.*

*Section Business.*

Nursing in England. MARGARET G. ARNSTEIN, R.N.

*Group discussion.*

TUESDAY, 2:30 P.M.

## VITAL STATISTICS

*First Session—Club Room A, Auditorium**Presiding:* HUGO MUENCH, M.D., *Chairman.**Section Business.*ADMINISTRATIVE USES OF STATISTICAL DATA IN PUBLIC  
HEALTH PROGRAMS

Statistics in the Planning and Evaluation of Health Procedures. HUGO MUENCH, M.D.

Uses of Statistical Data in State Health Departments. ELLEN B. WHITEMAN.

Administrative Uses of Statistical Data in an Industrial Hygiene Program. W. M. GAFATER, D.Sc.

Administrative Uses of Certain Statistical Data Obtained from a Register in the Control of Tuberculosis. G. E. HARMON, M.D.

Title to be announced. O. K. SAGEN, PH.D.

## ENGINEERING

*First Session—Room B, Auditorium**Presiding:* ALFRED H. FLETCHER, *Chairman.**Section Business.*Report of the Committee on Water Supply. *Chairman,* CHARLES R. COX.

Experiences With Free Chlorination of Public Water Supplies. RAYMOND J. FAUST.

*Discussion.* WARREN A. KRAMER.

A Comparative Study of Chlorine and Bromine for Swimming Pool Disinfection. THEODORE V. VANDERVELDE and WALTER L. MALLMANN, PH.D.

Report of the Committee on Sewage Disposal. *Chairman,* LANGDON PEARSE.

## SCHOOL HEALTH

*First Session—Room A, Auditorium**Presiding:* LEONA BAUMGARTNER, M.D., *Chairman.**Section Business.*Report of the Committee on Pre-service and In-service Training of School Personnel. *Chairman,* RUTH E. GROUT, PH.D.

Rural School Health Services. JESSIE M. BIERMAN, M.D.

Statement on Tuberculosis Case Finding in Schools. ARTHUR ROBINS, M.D.

**TUESDAY, 2:30 P.M.****INDUSTRIAL HYGIENE***First Session—Room C, Auditorium**Presiding:* T. LYLE HAZLETT, M.D., *Chairman.**The Value of Industrial Hygiene. Address of the Chairman.* T. LYLE HAZLETT, M.D.*Education in Industrial Health.* L. J. GOLDWATER, M.D.*Lessons Learned in the Services.**The Army.* A. J. LANZA, M.D.*The Navy—Maritime Service.* PHILIP DRINKER.*U. S. Public Health Service.* JAMES G. TOWNSEND, M.D.*Section Business.***TUESDAY, 8:30 P.M.****FIRST GENERAL SESSION***Music Hall, Auditorium**Presiding:* JOHN J. SIPPY, M.D., *President, American Public Health Association.**Addresses of Welcome:**World Health Organization.* FRANK G. BOUDREAU, M.D.*Announcement of Sedgwick Memorial Medal Award.**Reception to the President.***WEDNESDAY, 8:00 A.M.****PUBLIC HEALTH ADVISORY COMMITTEE OF THE  
NATIONAL SANITATION FOUNDATION***Breakfast Session—Parlor 1, Hotel Statler***WEDNESDAY, 9:30 A.M.****FIRST SPECIAL SESSION***Little Theatre, Auditorium**Presiding:***THE HEALTH DEPARTMENT AND MEDICAL CARE***The Responsibility of the Health Officer in a Medical Care Program.*  
FRED W. JACKSON, M.D.*The Maryland Medical Care Program.* DEAN ROBERTS, M.D.



## WEDNESDAY, 9:30 A.M.

## FIRST SPECIAL SESSION (Cont.)

Group Medical Practice in Preventive Medicine. DEAN A. CLARK, M.D.  
Health Departments and Medical Care—World Trends. JOHN B. GRANT, M.D.

## LABORATORY

*Third Session—Ball Room, Hotel Hollenden*

(Concurrent with the Fourth Session of the Laboratory Section)

Report of the Standard Methods Committee on Examination of Water and Sewage. *Chairman*, WALTER L. MALLMANN, PH.D.

The Voges-Proskauer Reaction and Differentiation of Coliform Bacilli. REESE H. VAUGHN, PH.D.

Enterococci as an Index of Fecal Pollution. LESLIE A. SANDHOLZER, PH.D., and CHARLES E. WINTER.

Source of Cocci Found in Swimming Pools. CASSANDRA RITTER.

A Study of an Additional Method of Water Analysis. ELIZABETH J. COPE, ROGER H. CHAPIN and ANDREW T. DEMPSTER.

Bacillary Dysentery in Human Volunteers. HOWARD J. SHAUGHNESSY, PH.D., ROLAND C. OLSSON, M.D., KENNETH BASS, FRANCES FRIEWER and SIDNEY O. LEVINSON, M.D.

Inactivation of Partially Purified Poliomyelitis Virus in Water by Chlorination. SERGE G. LENSEN, PH.D., MORRIS RHIAN and MAX R. STEBBINS.

## LABORATORY

*Fourth Session—Assembly Room, Hotel Hollenden*

(Concurrent with the Third Session of the Laboratory Section)

*Presiding*: SARA E. BRANHAM, M.D., *Vice-Chairman*.

Studies on Murine Typhus in Puerto Rico. A. POMALES-LEBRON, PH.D.

Studies on the Epidemiology of Encephalitis. S. EDWARD SULKIN, PH.D., CHARLES L. WISSEMAN, JR., M.D., CHRISTINE ZARAFONETIS and CLEO H. TERRY.

Immunization of Children with Influenza Virus Vaccine, Centrifuged Type. REGINALD A. HIGGONS, M.D., CLARA NIGG, PH.D., GERTRUDE M. HYDE, M.D., and CHARLES H. MANN, M.D.

Antigens for the Specific Diagnosis of Echinococcosis. WHELLAN D. SUTLIFF, M.D., ANNIS E. THOMPSON, M.D., and HOWARD B. SHOOKHOFF, M.D.

Observations Upon the Antigens Present in the Typhoid Strain Bhatnagar Vi I. ETHELINDA H. BROWER.

Cultivation of Tubercle Bacilli from Pathologic Material in Du Bos's Medium. GEORGE E. FOLEY.

## WEDNESDAY, 9:30 A.M.

## FOOD AND NUTRITION, SCHOOL HEALTH, AND MATERNAL AND CHILD HEALTH SECTIONS AND AMERICAN SCHOOL HEALTH ASSOCIATION

*Joint Session—Ball Room, Auditorium*

*Presiding:* MARIETTA EICHELBERGER, PH.D., LEONA BAUMGARTNER, M.D., EDYTHE P. HERSHEY, M.D., and S. B. MCPHEETERS, M.D.

Signs and Symptoms of Nutritional Deficiency in School Children. NORMAN JOLLIFFE, M.D.

*Discussion.* WALTER WILKINS, M.D.

Health Observations Which Teachers Can Make. MILTON I. LEVINE, M.D.

Demonstration of Teacher Observation Film Strip. GEORGE M. WHEATLEY, M.D., and S. S. LIFSON.

How Teachers Can Help to Discover Behavior Problems. MORTON A. SEIDENFELD, PH.D.

## INDUSTRIAL HYGIENE

*Second Session—Room B, Auditorium*

The National Workmen's Compensation Conference Committee. WAYNE MERRICK.

The Union Contract and Industrial Hygiene. BERNARD S. COLEMAN.

Aviation Medicine Is Industrial Hygiene. BRIG. GEN. EUGENE G. REINARTZ, U.S.A. (Ret.)

Next Steps in Industrial Hygiene Research. PAUL NEAL, M.D.

*Section Business.*

## EPIDEMIOLOGY AND VITAL STATISTICS SECTIONS

*Joint Session—Club Room B, Auditorium*

*Presiding:* CHARLES ARMSTRONG, M.D., and HUGO MUENCH, M.D.

## MORBIDITY STATISTICS

Methods of Collecting Statistics of Reportable Diseases in Denmark. JOHANNES NILSEN.

The Advantages of and the Need for a Uniform Classification of the Causes of Illness. SELWYN D. COLLINS, PH.D.

Proposed Classification of Disease, Injury and Cause of Death Prepared by U. S. Subcommittee. EDWARD S. ROGERS, M.D.

Morbidity Statistics Through Periodic Surveys of Households. THEODORE D. WOOLSEY.

Morbidity By-Products of Canada's Book of Life. J. T. MARSHALL.

WEDNESDAY, 9:30 A.M.

## ENGINEERING

*Second Session—Room C, Auditorium*

Field Training Programs, Communicable Disease Center. ELLIS S. TISDALE.

The Problem of Inaugurating and Administering Rural School Sanitation. L. W. JONES.

Dishwashing Practice and Effectiveness (Swab-Rinse Test) in a Large City as Revealed by a Survey of 1,000 Restaurants. HYMAN KLEINFELD and LEON BUCHBINDER, PH.D.

A Critical Study of Machine Dishwashing. WALTER L. MALLMANN, PH.D., PAUL DEKONING and LEO ZAIKOWSKI.

Group Planning for Better Community Health. R. G. NEBELUNG, DR.P.H.

## PUBLIC HEALTH EDUCATION

*Second Session—Room A, Auditorium*

*Presiding:* REBA F. HARRIS, *Secretary.*

## REGIONALISM IN RELATION TO PUBLIC HEALTH EDUCATION

Regionalism: An All-over View of Purpose and Plans. JOHN E. IVEY, PH.D.

Regionalism in Relation to the Health of the Public. CARL W. STROW.

Preview of Public Health Education within the Regions. Reports of Regional Committee Chairmen.

*Group questions and discussions.*

## DENTAL HEALTH

*Second Session—Club Room A, Auditorium*

## SYMPOSIUM ON STANDARDS OF DENTAL CARE IN PUBLIC HEALTH PROGRAMS FOR CHILDREN

*Discussion Leader:* To be announced.

Title to be announced. LESTER A. GERLACH, D.D.S.

Standards of Dental Service. NORMAN F. GERRIE, D.D.S.

Title to be announced. PETER J. WARREN, D.D.S.

WEDNESDAY, 2:30 P.M.

GOVERNING COUNCIL

*Second Meeting—Lattice Room, Hotel Statler*

HEALTH OFFICERS

*Second Session—Club Room B, Auditorium*

*Section Business.*

PROBLEMS OF PUBLIC HEALTH ADMINISTRATION

Program Audit—A Device for Reflecting Public Health Performance.  
JOSEPH W. MOUNTIN, M.D., and EVELYN FLOOK.

Implementation of the Report of the Subcommittee on Local Health  
Units. HAVEN EMERSON, M.D.

Evaluation of Local Health Work. ROSCOE P. KANDLE, M.D.

Criteria for the Allocation of Subsidy to Local Health Departments.  
J. A. KAHL, M.D.

Adjusting a Private Agency to an Official Program. KARL F. MEYER, M.D.

Are Public Health Workers Underpaid? WILLIAM P. SHEPARD, M.D.,  
and REGINALD M. ATWATER, M.D.

LABORATORY

*Fifth Session—Little Theatre, Auditorium*

*Section Business.*

Report of the Standard Methods Committee on Virus and Rickettsial  
Diseases. *Chairman*, THOMAS FRANCIS, JR., M.D.

LABORATORY METHODS FOR VIRUS AND RICKETTSIAL DISEASES

*Panel Leader:* THOMAS FRANCIS, JR., M.D.

*Participants:*

JOHN F. ENDERS, M.D.  
ALTO E. FELLER, M.D.  
W. McDOWELL HAMMON, M.D.  
GEORGE K. HIRST, M.D.  
HARALD N. JOHNSON, M.D.  
KARL F. MEYER, M.D.  
JOHN R. PAUL, M.D.  
GEOFFREY W. RAKE, M.B.  
JOSEPH E. SMADEL, M.D.  
R. M. TAYLOR, M.D.  
NORMAN H. TOPPING, M.D.

WEDNESDAY, 2:30 P.M.

## PUBLIC HEALTH EDUCATION

*Third Session—Hotel Statler*HEALTH NEEDS AND PROBLEMS OF THE PEOPLE WITHIN  
THE REGIONS

Seven Concurrent Clinics or Conferences of All Regional Groups with the  
Regional Committee Chairmen and Section Council Members Presiding

Committee on Public Health Education Problems in the Northeastern  
Region (*Parlor C*). *Presiding*: JOHN E. FARRELL, *Chairman*, and BESS  
EXTON, *Section Council Member*.

BETTER APPROACHES TO HEALTH EDUCATION IN THE  
NORTHEAST REGION

Through Community Health Councils. RUFUS S. REEVES, M.D.

Through Modern Publicity Techniques. PHILIP S. BROUGHTON.

Through Industrial Health Programs. WILLIAM A. SAWYER, M.D.

Through Medical and Hospitalization Plans. JAMES E. BRYAN.

Through an Evaluation of Health Indices. CARL W. STROW.

*Discussion.*

Committee on Public Health Education Problems in the Middle States,  
Region (*Parlor E*). *Presiding*: ALICE M. HEATH, *Chairman, pro tem*, and  
CARL A. WILZBACH, M.D., *Section Council Member*.

Program to be announced.

Committee on Public Health Education Problems in the Southeastern  
Region (*Parlor C*). *Presiding*: F. M. HEMPHILL, *Chairman*, and  
LUCY S. MORGAN, PH.D., *Section Council Chairman*.

Program to be announced.

Committee on Public Health Education Problems in the Southwestern  
Region (*Parlor B*). *Presiding*: LEWIS C. ROBBINS, M.D., *Chairman*, and  
J. LOUIS NETT, *Section Council Member*.

Program to be announced.

Committee on Public Health Education Problems in the Northwestern  
Region (*Parlor G*). *Presiding*: EDNA M. GERKEN, *Chairman*, and THOMAS  
G. HULL, PH.D., *Section Council Member*.

Program to be announced.

Committee on Public Health Education Problems in the Far West  
Region (*Parlor D*). *Presiding*: ANN W. HAYNES, *Chairman, pro tem*, and  
BRUNO GEBHARD, M.D., *Section Council Vice-Chairman*.

Program to be announced.

Committee on Public Health Education Problems in the Hawaiian  
Islands, Puerto Rico, and Latin American Republics (*Parlor F*). *Pre-*  
*siding*: CLARK YEAGER, DR.P.H., and ALICE M. JOHNSON.

Program to be announced.

## WEDNESDAY, 2:30 P.M.

INDUSTRIAL HYGIENE AND PUBLIC HEALTH  
NURSING SECTIONS*Joint Session—Room A, Auditorium*

*Presiding:* T. LYLE HAZLETT, M.D., and HELENE B. BUKER, R.N.

The Benefits and Hazards of Nuclear Energy. ANDREW H. DOWDY, M.D.

Results of an Industrial Hygiene Survey in a Metropolitan Area. ROBERT H. FLINN, M.D.

The Public Health Nurse's Interest and Contribution to the Health and Welfare of Industrial Workers. HEIDE HENRIKSEN, R.N.

The Real Function of Standing Orders. IRVING TABERSHAW, M.D.

## EPIDEMIOLOGY

*Second Session—Room C, Auditorium*

Frequency of Pulmonary Tuberculosis with Cavitation in Medical Examiner Cases in the Borough of Manhattan. EDGAR M. MEDLAR.

Familial Factors in Histoplasmin Sensitivity. MICHAEL L. FURCOLOW and SHIRLEY H. FEREBEE.

Studies on Histoplasmosis in a Rural Community. C. W. EMMONS, BYRON J. OLSON and JOSEPH A. BELL, M.D.

Allergy in Brucellosis. ALBERTO P. LEON, M.D.

Congenital Defects in a Year of Epidemic Rubella. R. E. OBER, M.D., and ROY F. FEEMSTER, M.D.

Some Epidemiological Aspects of Appendicitis. CARL C. DAUER, M.D.

DENTAL HEALTH SECTION AND AMERICAN SCHOOL  
HEALTH ASSOCIATION*Joint Session—Room B, Auditorium*

*Presiding:* J. M. WISAN, D.D.S., F. C. CADY, D.D.S., and S. B. MCPHEETERS, M.D.

Relation of Soils to Health, Bone Development, and Dental Caries. Speaker to be announced.

Current Concepts on Fluorine and Dental Health. F. J. MCCLURE, Ph.D.

Growth and Development of Teeth and Jaws. B. HOLLY BROADBENT, D.D.S.

The School's Responsibility in Dental Health Programs. OLIN E. HOFFMAN, D.D.S.

Newer Developments in Dental Programs for Rural Areas. CARL L. SEBELIUS, D.D.S.

Studies on Gingivitis and Vitamin C. WALTER WILKINS, M.D.

WEDNESDAY, 2:30 P.M.

## VITAL STATISTICS

*Second Session—Club Room C, Auditorium*STATISTICAL PROBLEMS RELATING TO MEDICAL CARE AND  
HOSPITAL PROJECTS

Basic Statistical Elements in the Problem of Medical Care. LOWELL J. REED, PH.D.

The Administrative and Research Value of Routine Analyses of Hospital Records. PAUL M. DENSEN, D.Sc.

Age and Sex Variations in Hospital Utilization. (An Example of Morbidity Data Available from Blue Cross Records.) J. D. COLMAN.

Statistical Basis for Measuring Hospital Needs. MAURICE J. NORBY.

MATERNAL AND CHILD HEALTH AND SCHOOL  
HEALTH SECTIONS*Joint Session—Ball Room, Auditorium*

*Presiding:* EBYTHE P. HERSHEY, M.D., and LEONA BAUMGARTNER, M.D.

Review of School Health Legislation. BEN W. MILLER, PH.D.

Experience and Lessons from Emergency Maternity and Infant Care Program. NATHAN SINAI, DR.P.H.

The American Academy of Pediatrics Study of Child Health Services: Objectives, Methods and Results to Date. KATHERINE BAIN, M.D., CHARLES L. WILLIAMS, JR., M.D., and JOHN P. HUBBARD, M.D.

PANEL DISCUSSION ON THE COMMUNITY RHEUMATIC  
FEVER PROGRAM

The Needs. DAVID RUTSTEIN, M.D.

The Mechanism. MARJORIE T. BELLOWS.

The National Approach. A. L. VAN HORN, M.D.

The Local Approach. To be announced.

## FOOD AND NUTRITION

*Second Session—Club Room A, Auditorium**Section Business.*

Nutrition Problems of Advancing Age. Report of the Committee on Nutritional Problems. *Chairman,* HELEN S. MITCHELL, PH.D.

Food Values of Dairy Products, Particularly as Affected by Method of Handling in Production, Distribution and Use. Report of the Committee on Milk and Dairy Products. *Chairman,* ETHEL A. MARTIN.

Report of the Committee on Foods (Except Milk). *Chairman,* HARRY W. VON LOESECKE.

## WEDNESDAY, 2:30 P.M.

## FOOD AND NUTRITION (Cont.)

Report of the Committee on Standard Methods for the Microbiological Examination of Foods. *Chairman*, H. E. GORESLINE, PH.D.

Report of the Joint Committee on Analyzing Frozen Desserts. *Chairman*, FREDERICK W. FABIAN, PH.D.

Report of the Committee on Membership and Fellowship. *Chairman*, ALICE H. SMITH.

Report of the Secretary. MARJORIE M. HESELTINE.

Report of the Nominating Committee. CARL R. FELLERS, PH.D.

## WEDNESDAY, 7:00 P.M.

## SECOND GENERAL SESSION

*Annual Banquet—Grand Ball Room, Hotel Statler*

*Presiding*: JOHN J. SIPPY, M.D., *President*, American Public Health Association.

*Presentation of Forty Year Membership Certificates.*

*Announcement of New Officers, Resolutions.*

*Presentation of Lasker Awards for 1946.*

*Presentation of 1946 Elizabeth Prentiss Award in Health Education.*

Dancing. Refreshments. Informal.

## THURSDAY, 9:30 A.M.

MATERNAL AND CHILD HEALTH, PUBLIC HEALTH  
NURSING, DENTAL HEALTH, AND SCHOOL  
HEALTH SECTIONS

*Joint Session—Ball Room, Auditorium*

*Presiding*: EDYTHE P. HERSHEY, M.D., HELENE B. BUKER, R.N., J. M. WISAN, D.D.S., and LEONA BAUMGARTNER, M.D.

## ADMINISTRATIVE ASPECTS OF CHILD HEALTH SERVICES

Elements of a Good School Health Program. LEONA BAUMGARTNER, M.D.

*Discussion:*

JOHN BRACKEN

ALBERT D. KAISER, M.D.

BOSSE B. RANDLE, R.N.

MILDRED MOUW, R.N.

Health of the Rural Child—A Challenge. JESSIE M. BIERMAN, M.D.

Dental Program. PHILIP E. BLACKERBY, JR., D.D.S.

Maternity and Child Welfare in a Large British City. JEAN M. MACINTOSH, M.D.



THURSDAY, 9:30 A.M.

## LABORATORY

*Sixth Session—Club Room B, Auditorium*

## WARTIME ARMY MEDICAL LABORATORY ACTIVITIES

The Wartime Army Medical Laboratory Organization. LT. COLONEL  
GUSTAVE J. DAMMIN, M.C., Res.

The Past, Present and Future of the Army Institute of Pathology.  
COLONEL JAMES E. ASH, M.C.

Public Health Aspects of Wartime Studies Conducted at the Army  
Institute of Pathology. MAJOR RUELL A. SLOAN, M.C.

Wartime Activities of the Army Veterinary Laboratories. COLONEL  
RAYMOND RANDALL, V.C.

The Routine Virus and Rickettsial Diagnostic Laboratory. HARRY PLOTZ,  
M.D.

Development and Use of the Shigella and Salmonella Typing Kits.  
MAJOR P. R. CARLQUIST, SN.C.

## VITAL STATISTICS

*Third Session—Room A, Auditorium*DEVELOPMENT OF DEMOGRAPHIC STATISTICS IN CITY  
HEALTH DEPARTMENTS

Development of Demographic Statistics in City Health Departments.  
W. THURBER FALES, D.Sc.

Health and Social Statistics for the City. HALBERT L. DUNN, M.D.

Use of Census Tracts in the Analysis of City Health Problems. HOWARD  
W. GREEN.

Postcensal Population Data for Cities. HENRY S. SHRYOCK, JR.

Certification of Death of 1,000 Diabetic Patients. HERBERT L. LOMBARD,  
M.D., and ELLIOTT P. JOSLIN, M.D.

## INDUSTRIAL HYGIENE

*Third Session—Room B, Auditorium*

*Presiding:* HELMUTH H. SCHRENK, Ph.D., *Vice-Chairman.*

Results of a Survey of Welders. W. C. DREESSEN.

Toxicity and Toxicology of Several Sulfur Compounds. HEINRICH  
BRIEGER, M.D.

Present Trends in the Enactment of Industrial Hygiene Codes. WILLIAM P. YANT.

Present Trends in Government Control of Occupational Disease.  
KENNETH M. MORSE.

## THURSDAY, 9:30 A.M.

## FOOD AND NUTRITION

*Third Session—Room C, Auditorium**Presiding: F. C. BLANCK, PH.D., Vice-Chairman.*

## FOOD TECHNOLOGY

Current Trends in Nutrition Research on Canned Foods. R. W. PILCHER, PH.D., and B. S. CLARK, PH.D.

Public Health and Nutritional Aspects of Frozen Foods. G. A. FITZGERALD.

Bacteriological Standards for Dehydrated Foods. H. E. GORESLINE, PH.D.

Work of the Committee on Food Composition of the Food and Nutrition Board of the National Research Council from 1943 to 1946. PAUL L. PAVCEK, PH.D.

Relation of Certain Cooking Procedures to Staphylococcus Food Poisoning. DOROTHY L. HUSSEMAN, PH.D., and F. W. TANNER, PH.D.

## EPIDEMIOLOGY

*Third Session—Club Room A, Auditorium*

Insect Control—An Important Factor in Public Health Work. F. C. BISHOPP, PH.D.

Tularemia in Indiana, Including an Industrial Outbreak. JAMES W. JACKSON, M.D.

California's Plan for Study and Control of Mosquito-borne Diseases. LESTER BRESLOW, M.D., and ARVE H. DAHL.

Colorado Tick Fever. LLOYD FLORIO, M.D.

Field Studies Relating to Immunity in Infectious Hepatitis and Homologous Serum Jaundice. ROSS L. GAULD, DR.P.H.

The Neutralization of the Mouse-Adapted Lansing Strain of Poliomyelitis Virus by the Serum of Patients and Contacts. GORDON C. BROWN, Sc.D., and THOMAS FRANCIS, JR., M.D.

## PUBLIC HEALTH EDUCATION

*Fourth Session—Club Room C, Auditorium*

Program to be announced.

## THURSDAY, 9:30 A.M.

## HEALTH OFFICERS AND ENGINEERING SECTIONS

*Joint Session—Little Theatre, Auditorium**Presiding:* ROY L. CLEERE, M.D., and ALTRLD H. FLETCHER.

## HOUSING—A PUBLIC HEALTH PROBLEM

*Panel Leader:* C.-E. A. WINSLOW, DR.P.H.*Participants:*

L. M. GRAVES, M.D.

E. R. KRUMBIEGEL, M.D.

M. ALLAN POND

CHARLES L. SENN

Medical Aspects of the Control of Infectious Jaundice. G. HOWARD  
GOWEN, M.D.Sanitary Engineering Aspects of the Control of Infectious Jaundice.  
MAJOR JAMES B. BATY.

## THURSDAY, 12:30 P.M.

NATIONAL COMMITTEE OF HEALTH COUNCIL  
EXECUTIVES*Luncheon Session—Mid-Day Club, Union Commerce Building, 925 Euclid  
Avenue, 21st Floor*GENERAL QUALIFICATIONS OF PROFESSIONAL STAFF MEMBERS  
OF HEALTH COUNCILSFor reservations, write to Mr. Howard W. Green, Cleveland Health Council,  
1001 Huron Road, Cleveland, Ohio.

## THURSDAY, 2:30 P.M.

## SECOND SPECIAL SESSION

*Little Theatre, Auditorium*

## LANDMARKS OF 1946

*Panel Leader:* REGINALD M. ATWATER, M.D.

## HEALTH OFFICERS

*Third Session—Room C, Auditorium*

## PROBLEMS OF AN AGING POPULATION

Setting the Stage. LOUIS I. DUBLIN, PH.D.

Sheltered Care of the Aged. JOSEPH H. KINNAMAN, M.D.

Preventive Aspects of Cancer Control. HERBERT L. LOMBARD, M.D.

Preventive Aspects of Diabetes. HUGH L. C. WILKERSON, M.D.

## THURSDAY, 2:30 P.M.

## LABORATORY

*Seventh Session—Room A, Auditorium*

(Concurrent with the Eighth Laboratory Session of the Laboratory Section)

Report of the Committee on Standard Methods for the Examination of Milk and Milk Products and the Joint Editorial Committee for Standard Methods for the Examination of Dairy Products. *Chairman*, ROBERT S. BRELD, PH.D.

Methods for the Determination of Filth and Extraneous Matter in Dairy Products. J. O. CLARKE.

The Problem of Reconstituted Milk. GEORGE H. HAUSER, M.D., and WILLIAM H. KING.

*Discussion:* R. J. REMALY.

Recent Improvements in Laboratory Equipment for Milk Control. A. H. ROBERTSON, PH.D.

Cheese and Its Relation to Disease. FREDERICK W. FABIAN, PH.D.

*Discussion:* WALTER D. TIEDEMAN, M.C.E.

Penicillin in the Treatment of Infectious Bovine Mastitis. CLAUDE S. BRYAN, PH.D., D.V.M.

Studies on the Treatment of Mastitis with Penicillin. L. W. SLANETZ, PH.D., and F. E. ALLEN, D.V.M.

## LABORATORY

*Eighth Session—Assembly Room, Hotel Hollenden*

(Concurrent with the Seventh Laboratory Session of the Laboratory Section)

*Presiding:* SARA E. BRANHAM, M.D., *Vice-Chairman*.

Report of the Committee on Standard Methods for the Examination of Germicides and Antibacterial Agents. *Chairman*, STUART MUDD, M.D.

The Effect of Antibiotics on Future Public Health Practices. AUGUSTUS GIBSON, M.D.

Observations in the *In Vivo* and *In Vitro* Development of Bacterial Resistance to Streptomycin. C. W. PRICE, W. A. RANDALL, PH.D., V. L. CHANDLER and R. J. REEDY, PH.D.

Correlation Between *In Vitro* Sensitivity of Pneumococcus, Type I, and Penicillin Protective Tests in Mice. W. A. RANDALL, PH.D., C. W. PRICE, and HENRY WELCH, PH.D.

Mouse Protection Tests in the Study of Pertussis Vaccine: A Comparative Series Using the Intracerebral Route for Challenge. PEARL L. KENDRICK, SC.D., GRACE ELDERING, SC.D., M. K. DIXON, and J. MISNER.

Immunization Against Pertussis Early in Life. LOUIS W. SAUER, M.D., and WINSTON H. TUCKER, M.D.

The Specific Diagnosis of Susceptibility to Prevention and Treatment of Pertussis. STUART MUDD, M.D.

THURSDAY, 2:30 P.M.

## EPIDEMIOLOGY

*Fourth Session—Room B, Auditorium*

Report of the Subcommittee for the Evaluation of Methods to Control Air-borne Infections. ALEXANDER D. LANGMUIR, M.D.

The Control of Cross Infections in Infants' Wards by the Use of Triethylene Glycol Vapor. CLAYTON G. LOOSLI, M.D., MARGARET H. D. SMITH, M.D., ROSS L. GAULD, DR.P.H., O. H. ROBERTSON, THEODORE T. PUCK, and EDWARDS A. PARK.

Effect of Ultraviolet Irradiation of Classrooms on Spread of Measles in Large Rural Central Schools. Preliminary Report. JAMES E. PERKINS, M.D., and ANNE M. BAHLKE, M.D.

Three Years' Experience in Use of Ultraviolet Radiation in Reduction of Upper Respiratory Infection in Naval Barracks. THOMAS L. WILLMON, Captain, U. S. Navy, and ALEXANDER HOLLAENDER.

An Outbreak of Influenza B in the Greater Boston Area. A. DANIEL RUBENSTEIN, M.D., and MAXWELL FINLAND.

An Outbreak of Q Fever at the National Institute of Health. ROBERT J. HUEBNER.

FOOD AND NUTRITION AND DENTAL HEALTH  
SECTIONS*Joint Session—Club Room B, Auditorium*

*Presiding:* MARIETTA EICHELBERGER, Ph.D., and J. M. WISAN, D.D.S.

## THE RELATION OF NUTRITION TO DENTAL HEALTH

Oral Environment and Fluorine. GERALD J. COX, Ph.D.

Clinical Observations. PAUL E. BOYLE, D.M.D.

Nutrition and Dental Caries. PHILIP C. JEANS, M.D.

PUBLIC HEALTH EDUCATION AND PUBLIC HEALTH  
NURSING SECTIONS*Joint Session—Ball Room, Auditorium*

## HEALTH EDUCATION—EVERYBODY'S BUSINESS

*Panel Leaders:* HELENE B. BUKER, R.N., and BRUNO GEBHARD, M.D.

*Participants:*

ALFRED L. BURGDORF, M.D.—Physician

LESTER A. GURLACH, D.D.S.—Dentist

CRANSTON J. WILCOX—Engineer

To be announced—Health Educator

PEARL HAMILTON, R.N.—Public Health Nurse

THURSDAY, 2:30 P.M.

ENGINEERING

*Third Session—Club Room A, Auditorium*

Report of the Committee on Shellfish. *Chairman, MILTON H. BIDWELL.*

Dynamic Control of Air-borne Infection. *WILLIAM F. WELLS.*

Schistosomiasis, As an Engineering Problem. *E. J. HERRINGER.*

Sewage Treatment Plants Constructed at Army Posts in the United States, 1940-1945. *ISADOR W. MENDELSON, C.E.*

SCHOOL HEALTH SECTION AND AMERICAN SCHOOL  
HEALTH ASSOCIATION

*Joint Session—Club Room C, Auditorium*

*Presiding:* LEONA BAUMGARTNER, M.D., and S. B. MCPHEETERS, M.D.

Nuisance Diseases. *DAVID VAN DER SLICE, M.D.*

Medical Examination of School Children. *HUBLEY R. OWEN, M.D.*

Techniques of Vision Testing. *WINIFRED HATHAWAY.*

California Hearing Conservation Program. *JESSIE M. BIERMAN, M.D.*

# ASSOCIATION NEWS

## SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 12-14

*Meetings of Related Organizations—November 11*

### RAILROAD FARES FROM VARIOUS POINTS TO CLEVELAND, OHIO

*American Public Health Association  
November 12-14, 1946*

From	One-way for Pullman Travel	Round Trip for Pullman Travel	One-way Lower Berth	One-way Upper Berth
Atlanta, Ga.	\$24.20	\$42.70	\$6.40	\$4.85
Baltimore, Md.	14.14	27.10	3.50	2.65
Boston, Mass.	22.50	41.75	4.95	3.75
Buffalo, N. Y.	6.11	12.05	2.95	2.20
Chicago, Ill.	11.66	22.45	2.95	2.20
Dallas, Tex.	39.62	66.30	10.40	7.95
Denver, Colo.	45.83	73.70	11.30	8.60
Duluth, Minn.	26.70	45.05	6.40	4.85
Fort Worth, Tex.	39.62	66.30	10.40	7.95
Indianapolis, Ind.	9.41	18.35	2.95	2.20
Jacksonville, Fla.	35.86	62.55	9.25	7.05
Kansas City, Mo.	26.44	45.20	6.40	4.85
Louisville, Ky.	12.32	22.90	3.60	2.85
Los Angeles, Calif.	84.48	121.80	20.80	15.85
Memphis, Tenn.	24.86	43.80	6.95	5.30
Milwaukee, Wis.	14.47	26.70	3.60	2.85
Minneapolis, Minn.	25.09	42.65	5.80	4.40
Nashville, Tenn.	18.48	33.20	5.25	4.00
New Orleans, La.	36.25	62.80	9.25	7.05
New York, N. Y.	18.81	35.30	4.35	3.30
Omaha, Nebr.	28.09	47.15	6.40	4.85
Philadelphia, Pa.	15.84	30.15	3.50	2.65
Pittsburgh, Pa.	4.35	8.65	2.35	1.80
Portland, Ore.	82.43	121.80	20.80	15.85
Salt Lake City, Utah	60.93	96.40	14.75	11.25
San Francisco, Calif.	84.48	121.80	20.80	15.85
Seattle, Wash.	82.43	121.80	20.80	15.85
St. Louis, Mo.	17.60	33.25	4.35	3.30
Washington, D. C.	14.14	27.10	3.50	2.65
Montreal, Que.	20.50	37.95	4.95	3.75
Halifax, N. S.	41.85	72.55	9.70	7.55
Ottawa, Ont.	18.39	34.20	4.95	3.75
Quebec, P. Q.	26.15	48.10	6.20	5.05
Toronto, Ont.	9.89	18.90	2.95	2.20
Vancouver, B. C.	82.43	121.80	21.20	16.10

NOTE: Add 15 per cent Government tax to all fares

RATES QUOTED BY CLEVELAND HOTELS

Seventy-Fourth Annual Meeting, November 12-14, 1946

AMERICAN PUBLIC HEALTH ASSOCIATION

ALL RATES QUOTED ARE FOR ROOMS WITH BATH  
ON EUROPEAN PLAN

NOTE: Double rooms are easier to secure than single

Hotel	No. of Rooms	Single	Double
Alcazar	300	\$3.00	\$5.00
Allerton	550	2.50-3.00	3.50- 5.00
Auditorium	300	2.00-3.50	4.00- 7.00
Bolton Square	284	2.50-3.00	3.50- 6.00
Carter	600	3.00-6.00	4.50- 9.00
Cleveland	1,000	3.00-7.00	4.50-12.00
Hollenden	1,000	3.00-5.00	4.50-12.00
New Amsterdam	250	2.00-3.00	3.50- 6.00
Olmsted	250	2.00-3.50	3.50- 7.00
Statler	1,000	3.00-6.00	5.00- 8.00
Wade Park Manor	400	3.50-5.00	5.50- 9.00

.....(Cut off on this line and mail to the hotel of your choice).....

HOTEL RESERVATION BLANK FOR THE CLEVELAND MEETING  
AMERICAN PUBLIC HEALTH ASSOCIATION, NOVEMBER 12-14, 1946

To .....  
(Name of Hotel)

Please reserve for me ..... rooms for ..... persons  
for the A.P.H.A. Meeting.

Single room ..... Double room .....

Maximum rate per day for room \$...... Minimum rate per day for room \$......

I expect to arrive ..... If date of arrival is changed I will notify  
you at least 24 hours in advance.

Please acknowledge this reservation.

Name .....

Street Address .....

City..... State.....

Mail directly to the hotel of your choice



## Standard Methods for Dairy Products

### *Summary of Recommended Changes for the Ninth Edition*

THE subject matter of the Eighth Edition of *Standard Methods for Dairy Products* has been entirely rewritten by Dr. A. H. Robertson, Director of the State Food Laboratory, Albany, N. Y., and Dr. Luther A. Black, of the Sanitation Division of the U. S. Public Health Service, Cincinnati, Ohio, with the active assistance of the following referees: Mac H. McCrady (Montreal), S. R. Damon (Indianapolis), W. D. Tiedeman (Albany), C. A. Abele (Chicago), C. K. Johns (Ottawa), M. W. Yale (Green Bay, Wis.), F. W. Fabian (East Lansing), E. H. Parfitt (Chicago), A. W. Fuchs (Washington), L. H. Burgwald (Columbus). More than 40 additional members of the Committees involved in the work, have contributed to the preparation by participation in conferences or through submitted criticisms and suggestions. An effort has been made to keep the report widely representative of the best thought in the milk and dairy products field of all of the countries actively participating in the work of the American Public Health Association.

This revision is being carried out under the direct supervision of the undersigned Chairmen of the Committees participating in the preparation of this report. These committees are: The Committee on Methods for Examining Milk and Milk Products of the Laboratory Section, R. S. Breed (Geneva), *Chairman*; Joint Committee on Frozen Desserts and their Ingredients, of the Laboratory and the Food and Nutrition Sections, F. L. Mickle (Hartford), *Chairman*; Committee on Bio-assay of Foods, of the Food and Nutrition Section, H. T. Scott (Madison), *Chairman*. The Chemical Methods are included through the coöperation of the Associa-

tion of Official Agricultural Chemists, represented by A. C. Hunter (since deceased).

Important recommended changes in the report may be summarized as follows:

1. Chapter 1 discussed the advantages and disadvantages of the more common quality tests for dairy products. Much of this material intended for the guidance of those who use the methods described was scattered throughout the Eighth Edition. This has been assembled in one chapter for the Ninth Edition. The subject matter deals with the selection of the most useful methods, shows how they are used, and finally suggests interpretations for quality standards as applied to acceptable milk and cream. Although quality standards now in use are given in the text it is felt that each jurisdiction involved must fix its own standards, suitable for enforcement under local conditions of production and marketing. The material is presented in the following order: "Raw Milk for Pasteurization," "Pasteurized Milk," and "Raw Milk to be Consumed Raw." Under this arrangement the directions for laboratory procedures are made direct and specific.

2. The style of presentation of methods has been confined in so far as possible to the imperative. This style alone reduces the verbiage in directions taken from the Eighth Edition by nearly 25 per cent and results in a much improved coördination and sequence of thought.

3. A cross-reference system in the text, which is a modification of the Dewey library system, has been used extensively. The references appear in bold face, which makes the need for

paging somewhat unnecessary. In addition to the cross-references, a subject index at the end of the book and a Table of Contents at the beginning have been included. The cross-reference system reduces the paging by an additional 5 per cent. The inclusion of new material, however, makes the new edition larger than the old edition.

The titles for the thirteen chapters follow:

Chapter	Title
1.	Selection and Interpretation of Quality Tests
2.	Microbiological Methods for Milk and Cream
3.	Detection of Special Bacterial Groups or Species
4.	Microbiological Methods for Butter
5.	Microbiological Methods for Cheese
6.	Microbiological Methods for Frozen Dessert Ingredients
7.	Microbiological Methods for Frozen Desserts
8.	Sterility Tests for Dairy Equipment
9.	Extraneous Matter (Sediment) in Dairy Products
10.	Determination of Vitamins in Dairy Products
11.	Phosphatase Methods to Determine Pasteurization
12.	Chemical Methods
13.	Screening Tests

4. Because extensive studies on the Methylene-Blue Reduction Test have demonstrated the need for counteracting the effect of creaming during the incubation of samples, hourly inversion of the sample tubes to redistribute the fat and bacteria has been prescribed in the modified procedure. A special modification of the procedure for recording methylene blue reduction test is introduced. The results obtained thereby seem to correlate more closely with quality standards which have been set up for interchangeable use with other methods of determining quality.

5. The "One-Hour" Resazurin Test and the "Triple-Reading" Resazurin Test have been accepted as useful standard methods.

6. Directions for the preparation of lactose broth, Endo agar and easin-methylene-blue agar have been added to the coliform section.

7. Microbiological Methods for Cheese have been included as follows:

(1) Methods for determining the yeast and mold content (A spoilage problem) in soft type cheeses, such as cottage cheese, cream cheese, etc.

(2) Methods for the isolation and identification of pathogenic bacteria in cheese.

In the latter section, attention is given to the isolation from cheese of pathogenic streptococci of Lancefield's Group A, species of *Brucella*, *Salmonella typhosa* and other salmonellas, the pathogenic shigellas and enterotoxigenic staphylococci.

8. Methods for examining stabilizers have been added to the chapter on Microbiological Methods for Frozen Dessert Ingredients.

9. Procedures for making Sediment Tests from Milk have been changed so as to permit both the Mixed Sample Method and the Off-Bottom Sample Method. Directions are furnished for preparing standard sediment discs which are reproducible. Methods for checking the efficiency of the various sediment testing devices on the market are also given.

10. Because of the close relationship between Filth, Extraneous Matter, and Sediment in Dairy Products, methods used by the U. S. Food and Drug Administration have been included in Chapter 9 for the determination and identification of filth in various dairy products including cream, butter, cheese, dried milk, evaporated milk and condensed milk.

11. Methods for the determination of thiamin hydrochloride, riboflavin and niacin have been added to Chapter 10 on Determination of Vitamins in Dairy Products.

12. Methods for the determination of

phosphatase in milk have been extended to include methods for its determination in cream, chocolate flavored milk, butter, cheese, and ice cream.

13. Screening tests have been segregated in Chapter 13. Although screening tests have been recognized but tacitly heretofore, they are now given recognition as rapid sorting procedures. The use of these methods permits the examination of a much larger number of samples than could otherwise be examined in the same length of time. Obviously, most examinations of finished products are necessarily of a survey character from the standpoint of a regulatory agency. As milk sheds enlarge, the need for screening tests becomes greater. Screening tests should not be used when laboratory results may be needed for court testimony. The use of screening test saves time which can be used advantageously to correct unsatisfactory conditions.

Among recognized screening test procedures are the following:

a. Practical field sterilization procedures for agitators and sampling tubes.

b. Sampling of the milk after it is dumped into the weigh vat.

c. Loop measurements for 0.01 ml. portions for the direct microscopic method.

d. Burri Slant Method as a semi-portable modification of the agar plate method to determine relative degrees of contamination.

e. A single tube test for coliform bacteria where successive samples are removed at frequent intervals during the pasteurization process.

f. Tests to check the presence of bacteria that survive pasteurization.

g. Tests to detect the presence of thermophilic bacteria.

h. Volumetric measurement of test portions of frozen desserts.

i. New York City field phosphatase test to determine whether milk has been pasteurized.

j. Modified Babcock methods (Minnesota Modification and Pennsylvania Modification) for determination of the milk fat in frozen desserts.

#### 14. Miscellaneous Items:

a. Transfer pipette specifications are shown in diagrams of the pipettes and are not included as part of the description of the pipette in the text.

b. An outline of specific procedures with a table of illustrations is provided to guide in "Selecting and Counting Colonies on Agar Plates."

c. When the number of fields to be counted, using the direct microscopic method, is constant, a working factor should be substituted for the microscopic factor. The working factor is obtained by dividing the microscopic factor by the number of fields counted. The use of the working factor simplifies the calculations when determining the number of clumps or bacteria per ml.

d. The application of the coliform test to raw milk, other than Certified Raw Milk, is not recommended or approved. The coliform test as applied to freshly bottled pasteurized milk is a delicate test when used to detect recontamination from equipment subsequent to pasteurization.

#### *Joint Editorial Committee*

A. PARKER HITCHENS

F. LEE MICKLE

H. T. SCOTT

A. C. HUNTER

R. S. BREED, *Chairman*

## APPLICANTS FOR FELLOWSHIP

*In accordance with the By-Laws of the Association, the names of applicants for Fellowship are officially published herewith. They have requested affiliation with the Sections indicated. Action by the various Section Councils, the Committee on Eligibility, and the Governing Council will take place during the Cleveland Annual Meeting.*

### Health Officers Section

Clement F. Batelli, M.D., Dr.P.H., Director, Bureau of Tuberculosis, New Haven Health Department, New Haven, Conn.

Philip A. Bearg, M.D., Dr.P.H., Health Officer, San Luis Obispo, Calif.

Stanley R. Benner, M.D., Health Officer, Yakima City-County Health Dept., Yakima, Wash.

David E. Bigwood, Jr., M.D., M.P.H., Health Officer, Utica, N. Y.

T. Elam Cato, M.D., M.P.H., Dade County Health Officer, Miami, Fla.

George A. Dame, M.D., Director, Bureau of Local Health Service, State Board of Health, Jacksonville, Fla.

Abe J. Davis, M.D., Commissioner of Health, Richmond County Health Dept., Augusta, Ga.

George B. Davis, M.D., M.P.H., Health Officer, Milford, Conn.

John C. Dement, M.D., M.P.H., Assistant Chief, Division of Local Health Services, State Department of Public Health, San Francisco, Calif.

O. Merton Derryberry, M.D., M.P.H., Chief, Employee Health Services Division, Tennessee Valley Authority, Chattanooga, Tenn.

James A. Dolce, M.D., M.S.P.H., Chief, Division of Local Health Administration, State Department of Health, Hartford, Conn.

James R. Enright, M.D., Director, Bureau of Communicable Diseases, Territorial Board of Health, Honolulu, Hawaii

Leroy L. Fathcrrec, M.D., M.P.H., Superintendent of Health, Lincoln, Nebr.

Antonio Fernos-Isern, M.D., Commissioner of Health, Puerto Rican Department of Health, San Juan, P. R.

Allan Filck, M.D., M.S.P.H., Director of Local Health Administration, State Board of Health, Madison, Wis.

Harald M. Graning, M.D., M.P.H., Associate Director, Division of Local Health Organizations, State Department of Public Health, Atlanta, Ga.

John J. Hanlon, M.D., M.P.H., Resident Lecturer in Public Health Practice, University of Michigan School of Public Health, Ann Arbor, Mich.

Fredrick W. Jackson, M.D., D.P.H., Deputy Minister, Manitoba Department of Health and Public Welfare, Winnipeg, Man., Canada

George James, M.D., M.P.H., District State Health Officer, State Health Department, Kingston, N. Y.

John A. Kahl, M.D., M.P.H., Assistant State Director, State Health Department, Seattle, Wash.

Edmond G. Klamke, M.D., M.P.H., Director, Alexandria-Rapides Health Department, Alexandria, La.

Leslie W. Knott, M.D., M.P.H., Medical Administrative Assistant, State Department of Public Health, Springfield, Ill.

Sanford P. Lehman, M.D., M.S.P.H., District Health Officer, Clark County-City Health Department, Vancouver, Wash.

Walter C. Levy, M.D., M.P.H., District Health Officer, State Department of Health, Jamestown, N. Y.

Angel M. Marchand, M.D., M.P.H., Assistant Commissioner of Health, Puerto Rican Department of Health, Santurce, P. R.

Daniel P. McMahon, M.D., M.P.H., District Health Officer, State Department of Health, Hornell, N. Y.

Walter H. Miles, M.D., Director, City Health Department, Oklahoma City, Okla.

C. Martin Mills, M.D., M.S.P.H., Commissioner of Health, Richmond, Calif.

Harcourt A. Morgan, Jr., M.D., M.P.H., Director, Bedford-Marshall District Health Department, Shelbyville, Tenn.

Allan R. Morton, M.D., M.P.H., City Commissioner of Public Health and Welfare, Halifax, N. S., Canada

Norman B. Nelson, M.D., Dr.P.H., Chairman, Department of Public Health, University of California, Los Angeles, Calif.

Blair Points, M.D., Director, Health Unit 5, State Department of Health, Madill, Okla.

Jack B. Porterfield, M.D., M.P.H., Director of Public Health, Richmond, Va.

Leland E. Powers, M.D., M.S.P.H., Director of Health Service and Executive Officer, Department of Preventive Medicine, University of Washington, Seattle, Wash.

William H. Riheldaffer, M.D., Chief of Public Health and Safety, Southeastern Division, Tennessee Valley Authority, Chattanooga, Tenn.

- Wilson T. Sowder, M.D., M.P.H., State Health Officer, Jacksonville, Fla.
- Milton Terris, M.D., M.P.H., Medical Associate, Subcommittee on Medical Care, American Public Health Association, Bethesda, Md.
- Fannie I. Tomson, M.D., M.S.P.H., Acting Health Officer, City Department of Health, New York, N. Y.
- Edward L. Van Aelstyn, M.D., C.P.H., Health Officer, Cowlitz-Wahkiakum Department of Health, Kelso, Wash.
- Gertrud Weiss, M.D., M.S.P.H., Assistant District Health Officer, City Department of Health, New York, N. Y.

#### *Laboratory Section*

- C. F. Bain, M.S.P.H., Senior Bacteriologist, State Department of Public Health, Boise, Ida.
- John H. Brewer, Ph.D., Director of Biological Research, Hynson, Westcott & Dunning, Baltimore, Md.
- Leon Buchbinder, Ph.D., Senior Bacteriologist, City Department of Health, New York, N. Y.
- John J. Clemmer, M.D., Director, Bender Hygienic Laboratory, Albany, N. Y.
- Sophia M. Cohen, B.S., Senior Bacteriologist, Division of Laboratories and Research, State Department of Health, Albany, N. Y.
- Charles A. Dille, M.D., Director, Clinical Laboratory and Pathologist, Blood Bank, Good Samaritan Hospital, Dayton, Ohio
- John H. Dingle, M.D., Sc.D., Professor of Preventive Medicine, Western Reserve University, Cleveland, Ohio
- Charles A. Doan, M.D., Director of University Hospital and Medical Research, Ohio State University, Columbus, Ohio
- Bernice E. Eddy, Ph.D., Bacteriologist, National Institute of Health, Bethesda, Md.
- Armand Frappier, M.D., Director, School of Hygiene, University of Montreal, Montreal, Que., Canada
- Roy Fraser, A.M., Professor of Biology and Bacteriology and Head of Department, Mount Allison University, Sackville, N. B., Canada
- R. B. H. Gradwohl, M.D., Director, Gradwohl Laboratories, St. Louis, Mo.
- Justina H. Hill, D.Sc., Assistant Professor of Medicine, Johns Hopkins University, Baltimore, Md.
- Marshall W. Jennison, Ph.D., Professor of Bacteriology, Department of Plant Sciences, Syracuse University, Syracuse, N. Y.
- Albert P. Krueger, M.D., Professor of Bacteriology and Lecturer in Medicine, University of California, Berkeley, Calif.

- Robert A. H. Mackeen, M.D., Director of Laboratories, Provincial Department of Health, St. John, N. B., Canada
- Charles A. Mitchell, D.V.M., Chief, Pathological Division, Canadian Government, Hull, Que., Canada
- Erwin Neter, M.D., Bacteriologist, Children's Hospital, Buffalo, N. Y.
- Allan C. Rankin, M.D., D.P.H., Emeritus Professor of Bacteriology and Hygiene, University of Alberta, Edmonton, Alta., Canada
- Arthur M. Slee, Director, Biological Division, National Drug Co., Philadelphia, Pa.
- E. Lee Treece, Ph.D., Associate Professor of Bacteriology, University of Kansas, Lawrence, Kans.
- Philip L. Varney, Ph.D., Assistant Professor of Bacteriology and Immunology, Washington University Medical School, St. Louis, Mo.
- William G. Workman, M.D., Senior Surgeon, U. S. Public Health Service, Bethesda, Md.

#### *Vital Statistics Section*

- George F. Badger, M.D., M.P.H., Associate Professor of Biostatistics, Department of Preventive Medicine, Western Reserve University, Cleveland, Ohio
- H. M. C. Luyckx, M.S., Assistant Professor of Preventive Medicine, New York University, College of Medicine, New York, N. Y.
- O. K. Sagen, Ph.D., Chief, Division of Vital Statistics and Records, State Department of Public Health, Springfield, Ill.
- Jane Worcester, A.B., Associate in Vital Statistics, Harvard School of Public Health, Boston, Mass.

#### *Engineering Section*

- Harold S. Adams, B.Sc., Chief, Bureau of Environmental Hygiene, Division of Public Health, Minneapolis, Minn.
- Cecil K. Calvert, B.S., Superintendent of Purification, Indianapolis Water Co., Indianapolis, Ind.
- Robert P. Cherry, B.S., Sanitary Engineer, City Health Department, Wichita, Kans.
- Robert N. Clark, M.S., C.E., Chief Public Health Engineer, Tennessee Valley Authority, Chattanooga, Tenn.
- Maurice H. Coblenz, A.B., Sanitarian (R), U. S. Public Health Service, San Francisco, Calif.
- Andrew T. Dempster, Jr., M.S., Associate Sanitary Engineer, Department of Health, Detroit, Mich.
- Herbert J. Dunsmore, B.S., Director, Division of Sanitation, Calhoun County Health Department, Battle Creek, Mich.

- Francis B. Elder, M.S.P.H., Engineering Associate, American Public Health Association, New York, N. Y.
- Curtiss M. Everts, Jr., M.S., Director, Division of Sanitary Engineering, State Board of Health, Portland, Ore.
- Edmund C. Garthe, C.E., Sanitary Engineer, U. S. Public Health Service, Chicago, Ill.
- Nelson Hall, Supervisor, Division of Sanitation, Department of Public Health, Saginaw, Mich.
- E. J. Herringer, B.S., Sanitary Engineer, U. S. Public Health Service, Richmond, Va.
- Morton S. Hilbert, B.S.C.E., M.P.H., Director, Bureau of Engineering, Wayne County Health Department, Eloise, Mich.
- Clyde C. Kennedy, M.S., Consulting Sanitary Engineer, San Francisco, Calif.
- Samuel P. Kingston, M.S.C.E., Public Health Engineer, Health Department, Rochester, Minn.
- Gordon E. McCallum, C.E., Sanitary Engineer, U. S. Public Health Service, New Orleans, La.
- Richard M. McLaughlin, Director, Division of Sanitation, Westchester County Department of Health, White Plains, N. Y.
- John B. Miller, B.S.E.E., Sanitary Engineer and Assistant Director, Bureau of Sanitary Engineering, State Board of Health, Jacksonville, Fla.
- M. Allen Pond, M.P.H., Assistant Professor of Public Health and University Sanitary Inspector, Yale University, New Haven, Conn.
- Edward A. Reinke, B.S.C.E., Senior Sanitary Engineer, State Department of Public Health, Berkeley, Calif.
- Frank Tetzlaff, C.E., Sanitary Engineer, U. S. Public Health Service, Atlanta, Ga.
- Hugh A. Wyckoff, M.S., Head, Department of Biology and Public Health Engineering, Georgia School of Technology, Atlanta, Ga.
- Industrial Hygiene Section*
- Paul J. Bamberger, M.D., Assistant to Medical Director, Bethlehem Steel Co., Bethlehem, Pa.
- Clyde M. Berry, Ph.D., Industrial Hygiene Engineer, Division of Industrial Hygiene, U. S. Public Health Service, Bethesda, Md.
- H. Irving Dunn, M.D., Industrial Medical Officer, Headquarters Service Command, U. S. Army (formerly Director of Industrial Health, Merck & Co., Inc.), Elizabeth, N. J.
- Jean S. Felton, M.D., Principal Physician, Monsanto Chemical Co., Knoxville, Tenn.
- Robert M. Graham, M.D., Director, Department of Sanitation and Surgery, The Pullman Co., Chicago, Ill.
- Franklin J. Halpin, M.D., Medical Director, Bureau of Employees' Compensation, Federal Security Agency, New York, N. Y.
- Harold R. Hennessy, M.D., C.P.H., Assistant Secretary, Council on Industrial Health, American Medical Association, Chicago, Ill.
- Kingsley Kay, Ph.D., Chief, Industrial Health Laboratories, Department of National Health, Ottawa, Ont., Canada
- Thomas W. Nale, M.D., C.P.H., Assistant Manager, Toxicology Department, Union Carbide & Carbon Corp., New York, N. Y.
- Everett W. Probst, M.D., Plant Physician, E. I. Dupont de Nemours & Co., Arlington, N. J.
- August T. Rossano, Jr., M.S., Industrial Hygiene Consultant, U. S. Public Health Service, San Francisco, Calif.
- Harry E. Seifert, C.E., Chief, Engineering Unit, Division of Industrial Hygiene, U. S. Public Health Service, Bethesda, Md.
- Frederick H. Shillito, M.D., Medical Director, Pan American Airways, Inc., New York, N. Y.
- Emerson Venable, B.S., Research Chemist, Mine Safety Appliances Co., Pittsburgh, Pa.
- Felix E. Wormser, E.M., Secretary-Treasurer, Lead Industries Association, New York, N. Y.
- Food and Nutrition Section*
- Richmond K. Anderson, M.D., Ph.D., Officer in Charge of Field Studies in Nutrition, U. S. Public Health Service, Washington, D. C.
- M. Thomas Bartram, Ph.D., Bacteriologist, U. S. Food and Drug Administration, Washington, D. C.
- Otto A. Bessey, Ph.D., Chief, Division of Nutrition and Physiology and Acting Director, Public Health Research Institute of City of New York, N. Y.
- French Boyd, B.S., Chief Nutritionist, Nutrition Section, U. S. Public Health Service, Washington, D. C.
- George R. Cowgill, Ph.D., Professor of Nutrition, Yale University, New Haven, Conn.
- Marie E. Dohm, M.A., Director, Nutrition Service, Cleveland Health Council, Cleveland, Ohio
- William B. Esselen, Jr., Ph.D., Assistant Research Professor, Food Technology, Massachusetts State College, Amherst, Mass.
- Wendell H. Griffith, Ph.D., Professor of Biochemistry, St. Louis University School of Medicine, St. Louis, Mo.
- Victor E. Levine, Ph.D., M.D., Lt. Col., Medical Department, U. S. Army (formerly Professor and Head, Department of Bio-

logical Chemistry and Nutrition, Creighton University), Woodside, N. Y.

Mary Reeves, M.P.H., Nutrition Consultant, State Board of Health, Jefferson City, Mo.

Harold R. Sandstead, M.D., Chief, Nutrition Section, States Relations Division, U. S. Public Health Service, Washington, D. C.

Christian P. Segard, M.D., Medical Director, Wisconsin Alumni Research Foundation, New York, N. Y.

Glenn G. Slocum, Ph.D., Acting Chief, Division of Microbiology, U. S. Food and Drug Administration, Washington, D. C.

B. Alene Theisner, M.S., Executive Secretary and Director, Dairy Council of Detroit, Detroit, Mich.

A. LeRoy Voris, Ph.D., Executive Secretary, Food and Nutrition Board, National Research Council, Washington, D. C.

Eleanor M. Wilkinson, M.S., Consultant in Nutrition, Children's Bureau, Washington, D. C.

#### *Maternal and Child Health Section*

Hilda H. Kroeger, M.D., M.S., Maternal and Child Health Director, State Department of Health, Phoenix, Ariz.

Helen M. Wallace, M.D., M.P.H., Director, EMIC, Bureau of Child Hygiene, City Department of Health, New York, N. Y.

Elizabeth C. Wells, M.D., Child Hygiene Physician, State Department of Health, Hartford, Conn.

#### *Public Health Education Section*

Josephine J. Albrecht, A.B., Executive Secretary, Health Division, Community Welfare Council, Omaha, Nebr.

Berl ben Meyr, Public Health Educator, City Health Department, Los Angeles, Calif.

Oliver E. Byrd, Ed D., Associate Professor of Hygiene and Director, Division of Health Education, Stanford University School of Health, Stanford University, Calif.

Bertha H. Campbell, Educational Director, State Board of Health, Topeka, Kans.

Lewis Dodson, M.S.P.H., Director of Public Health Practices, National Sanitation Foundation, University of Michigan, Ann Arbor, Mich.

Marjorie B. Eastabrooks, M.Sc., Health Education Consultant, State Department of Health, Olympia, Wash.

Everett H. Ellinwood, M.D., M.P.H., Director of North Carolina School Health Coordinating Service, Raleigh, N. C.

Louisa J. Eskridge, C.P.H., Health Education Consultant, U. S. Public Health Service, Lansing, Mich.

Irving Gerring, M.S.P.H., Sanitarian (R), U. S. Public Health Service, Washington, D. C.

Alice M. Heath, C.P.H., Health Education Representative, State Department of Public Health, Springfield, Ill.

Edna M. Kech, B.A., Chief, Division of Public Health Education, State Department of Health, Harrisburg, Pa.

Alfred E. Kessler, M.S.P.H., Executive Secretary, Denver Tuberculosis Society, Denver, Colo.

Granville W. Larimore, M.D., M.P.H., Educational Director, American Cancer Society, New York, N. Y.

A. Helen Martikainen, M.P.H., Health Education Consultant, U. S. Public Health Service, Richmond, Va.

Jennelle V. Moorhead, B.A., Field Secretary, University of Oregon Medical School, Portland, Ore.

Edwin S. Powell, Public Health Educator, State Board of Health, Columbia, S. C.

Evelyn Rahm, M.S.P.H., Health Education Consultant, U. S. Public Health Service, Washington, D. C.

Austin E. Smith, M.D., C.M., Secretary, Council on Pharmacy and Chemistry, American Medical Association, Chicago, Ill.

Roscoe R. Spencer, M.D., Chief, National Cancer Institute, Bethesda, Md.

Clark H. Yeager, M.D., Dr.P.H., Chief of Medical Section, Health and Sanitation Division, Institute of Inter-American Affairs, Washington, D. C.

#### *Public Health Nursing Section*

Agnes B. Bowe, M.A., Senior Assistant Nurse Officer, U. S. Public Health Service; Acting Tuberculosis Nursing Consultant, State Health Department, New Orleans, La.

Jefferson I. Brown, Director, Public Health Nursing Division, State Department of Health, Phoenix, Ariz.

Evelyn Buck, R.N., Consultant, Child Welfare and School Nursing, Department of Health, Detroit, Mich.

Lessie K. Cather, B.S., Director of Nurses, Fulton County Health Department, Atlanta, Ga.

Gertrude M. Clouse, R.N., B.S., District Advisory Nurse, State Board of Health, Fond du Lac, Wis.

Margaret Denham, M.A., C.P.H., District Consultant, U. S. Public Health Service, San Francisco, Calif.

Caroline E. di Donato, R.N., A.M., Director of Public Health Nursing, Seton Hall College, New York, N. Y.

Margaret B. Dolan, B.S., Public Health Nursing Consultant, Tuberculosis Control Division, U. S. Public Health Service, Washington, D. C.

Irene M. Donovan, R.N., B.S., Director, Division of Public Health Nursing, State Department of Health, Bismarck, N. D.

Rose G. Ernsberger, B.S., Assistant Nurse Officer and State Consultant Nurse, Tuberculosis Control Division, U. S. Public Health Service, Phoenix, Ariz.

Mildred E. Garrett, R.N., B.S., Director, Division of Public Health Nursing, State Department of Health, Austin, Tex.

Jane D. Gavin, M.A., State Advisory Nurse, State Department of Health, Portland, Ore.

Martha I. Hauk, M.A., Regional and Maternity Nursing Consultant, State Department of Health, Lansing, Mich.

Milenka Herc, R.N., M.A., Mental Hygiene Consultant and Personnel Director, Visiting Nurse Association, Detroit, Mich.

Geraldine Hiller, M.A., District Supervisor, State Bureau of Health, Augusta, Me.

Theresa H. Jenniges, B.S., Senior Assistant Nurse Officer (R), U. S. Public Health Service, Portland, Ore.

Anne M. Leffingwell, M.S., Senior Assistant Nurse Officer (R), U. S. Public Health Service, Chicago, Ill.

Edna Lewis, R.N., M.A., Director, Department of Public Health Nursing, Loyola University, Chicago, Ill.

Mabelle J. Markee, M.S.P.H., Industrial Nursing Consultant, U. S. Public Health Service, Washington, D. C.

Eleanor E. Palmquist, M.A., Executive Secretary, Joint Committee on Community Nursing Service, National Organization for Public Health Nursing, New York, N. Y.

Florence L. Phenix, B.S., Special Nursing Consultant, Children's Bureau, Washington, D. C.

Margaret E. Ranck, B.S., Educational Director, Des Moines Public Health Nursing Association, Des Moines, Ia.

Ione M. Rowley, B.S., R.N., Assistant Director, Bureau of Public Health Nursing, State Board of Health, Madison, Wis.

Margaret L. Shetland, M.A., Regional Public Health Nursing Consultant, State Department of Health, Lansing, Mich.

Jessie L. Stevenson, R.N., A.B., Consultant on Orthopedic Nursing, National Organization for Public Health Nursing, New York, N. Y.

Bertha M. Tiber, B.S., Public Health Nursing Consultant, U. S. Indian Service, Chicago, Ill.

Maisie V. Wetzel, M.S., Director, Program of Study in Public Health Nursing, University of Oregon Medical School, Portland, Ore.

Dorothy Wilson, M.A., Educational Director, Visiting Nurse Service of New York, New York, N. Y.

#### *Epidemiology Section*

Katharine R. Boucot, M.D., Director of X-ray Surveys, Philadelphia Tuberculosis and Health Association, Philadelphia, Pa.

I. Jay Brightman, M.D., M.S.P.H., Field Director, Blood Bank Program, State Department of Health, Albany, N. Y.

William A. Davis, M.D., M.P.H., Assistant Professor of Medicine and Preventive Medicine, New York University College of Medicine, New York, N. Y.

Walvin R. Giedt, M.D., M.P.H., Head, Section of Epidemiology, State Department of Health, Seattle, Wash.

Charles R. Hess, M.D., Chest Specialist, Veterans Tuberculosis Hospital, Oteen, N. C.

Warren W. Lacey, Jr., M.D., M.P.H., District Health Officer, City Department of Health, New York, N. Y.

William D. Schrack, Jr., M.D., M.P.H., Epidemiologist, State Department of Health, Harrisburg, Pa.

Arthur J. von Werssowetz, M.D., Director, Venereal Disease Control Program, Chattanooga-Hamilton County Health Department, Chattanooga, Tenn.

#### *School Health Section*

Ruth E. Boynton, M.D., M.S., Director of Students' Health Service and Professor of Public Health, University of Minnesota, Minneapolis, Minn.

Robert W. Culbert, M.D., M.S.P.H., Chief, Child and School Health Service, City Department of Health, New York, N. Y.

Dorothy M. LaSalle, Ed.D., Visiting Professor, School of Education, University of Michigan, Ann Arbor, Mich.

Ben W. Miller, Ph.D., Executive Secretary-Treasurer, American Association for Health, Physical Education and Recreation, Washington, D. C.

Philip Ollstein, M.D., Supervising School Physician, City Department of Health and Instructor, Department of Public Health and Preventive Medicine, Cornell University Medical School, New York, N. Y.

Regine K. Stix, M.D., M.A., Chief, Secondary School Health Service, City Department of Health, New York, N. Y.



*Dental Health Section*

Dorothy Bryant, D.H., Associate Director, Division of Dental Health, State Bureau of Health, Augusta, Me.

A. Laurence Corbman, D.D.S., M.P.H., Director, Division of Dental Public Health, State Department of Public Health, Boston, Mass.

John T. Fulton, D.D.S., Dental Services Adviser, Children's Bureau, Washington, D. C.

Thomas L. Hagan, D.D.S., M.P.H., Regular Dental Officer, U. S. Public Health Service, New Orleans, La.

Hugo M. Kulstad, D.D.S., Private Practice, Pomona, Calif.

Lon W. Morrey, D.D.S., Director, Bureau of Public Relations, American Dental Association, Chicago, Ill.

A. Harry Ostrow, D.D.S., Director, Bureau of Dental Services, D. C. Health Department, Washington, D. C.

Carl L. Sebelius, D.D.S., M.P.H., Director of Dental Hygiene Service, State Department of Public Health, Nashville, Tenn.

Frances A. Stoll, M.A., D.H., Guest Lecturer on Health Education and Dental Health, Teachers College and School of Public Health, Columbia University, New York, N. Y.

Raymond M. Walls, D.D.S., Dental Consultant, U. S. Public Health Service, and Bethlehem School District, Bethlehem, Pa.

*Unaffiliated*

Albert L. Allen, M.D., Chief, Field Services, Southern Division, Tennessee Valley Authority, Wilson Dam, Ala.

Chesley Bush, M.D., Superintendent and Medical Director, Arroyo Del Valle Sanatorium, Livermore, Calif.

M. Ruth Butler, M.A., Executive Director, Philadelphia Heart Association, Philadelphia, Pa.

Dean A. Clark, M.D., Medical Director, Health Insurance Plan of Greater New York, New York, N. Y.

Leonhard F. Fuld, Ph.D., Health Director, Jersey City Medical Center, Jersey City, N. J.

Armando M. Gamboa, M.D., Surgeon, Chestnut Hill, Mass.

Jules Gilbert, M.D., D.P.H., Assistant Director, School of Hygiene, Montreal University, Montreal, Que., Canada

Robert C. Hume, M.D., M.P.H., Assistant Physician, Standard Oil Company of New Jersey, New York, N. Y.

Vincent Ippolito, M.D., Physician, City Health Department, New York, N. Y.

Austin Joyner, M.D., Medical Adviser, Lederle Laboratories, Inc., Pearl River, N. Y.

Arthur M. Master, M.D., Chairman, Education Committee, New York Heart Association and Assistant Professor of Clinical Medicine, Columbia University, New York, N. Y.

Claudio E. McNeeney, M.D., Chief of Medical Division, Board of Health, Jersey City, N. J.

Franco Mortara, M.D., M.P.H., Assistant Professor of Preventive Medicine, New York University College of Medicine, New York, N. Y.

Mildred C. J. Pfeiffer, M.D., M.P.H., Internist (Industrial Medicine), Medical Division, Department of Public Safety, Chief Police Surgeon's Office, Philadelphia, Pa.

Horace D. Pritchett, V.M.D., Private Practice of Veterinary Medicine, Farmville, Va.

Guy V. Rice, Jr., M.D., Director, Division of Maternal and Child Health, State Department of Public Health, Atlanta, Ga.

Myron P. Rudolph, M.D., Dr.P.H. (Col. M.C., Office of Military Government, Germany), Louisville, Ky.

Clifford C. Shoro, Director, Division of Accounts, State Department of Health, Albany, N. Y.

J. Earl Smith, M.D., Medical Director of Communicable Disease Control Section, Health Division, St. Louis, Mo.

Allan A. Twitchell, B.A., Technical Secretary, Committee on the Hygiene of Housing, American Public Health Association, New Haven, Conn.

Arthur Williams, D.D.S., M.P.H., Public Health Dentist, D. C. Health Department, Washington, D. C.

## DECEASED MEMBERS

Edward G. Huber, M.D., Dr.P.H., Waban, Mass., Elected Member 1924, Elected Fellow 1928, Epidemiology Section

Ward J. MacNeal, Ph.D., M.D., New York, N. Y., Elected Member 1920, Laboratory Section

Rosemary Phillips, R.N., St. Louis, Mo., Elected Member 1939, Public Health Nursing Section

Hyman I. Spector, M.D., St. Louis, Mo., Elected Member 1932, Unaffiliated

Cornelia van Kooy, R.N., Madison, Wis., Elected Member 1934, Public Health Nursing Section

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

Charles P. Anderson, M.D., 269 Rutledge St., Gary, Ind., Director of Medical Inspection, Gary City Schools, and Member of Board of Health

James L. Booth, M.D., Washington County Health Dept., Greenville, Miss., Washington County Health Officer

Cecil E. Cook, M.D., D.P.H., 57 Murray St., Perth, West Australia, Commissioner of Public Health for Western Australia

Aubrey Y. Covington, M.D., M.P.H., P. O. Box 706, Starke, Fla., Director, Clay-Bradford-Union County Health Dept.

George R. F. Elliot, M.D., D.P.H., P. O. Box 40, Vernon, B. C., Canada, Director, North Okanagan Health Unit

Stanley S. Greenfield, M.D., 629 Empire Blvd., Brooklyn 13, N. Y., Junior Health Officer, New York City Dept. of Health

Edmund T. Hackman, M.D., 10 Post Rd., Edgewood 5, R. I., Superintendent of Health, Warwick Health Dept.

Donald G. H. MacDonald, M.D., D.P.H., 58 Main St., S., Brampton, Ontario, Canada, Director, Peel County Health Unit

Constantin Mavromates, M.D., M.P.H., 162 West 54th St., New York, N. Y., Health Officer, Greek Ministry of Public Health

J. Ancheng Miao, M.D., M.P.H., 19 Hsi-Ssu-Han, Kunming, Yunnan, China, Commissioner, Yunnan Provincial Health Administration

Harry Shapiro, M.D., 81 West Brookside Drive, Larchmont, N. Y., Health Officer in-training, New York City Dept. of Health

Clarence McK. Sharp, M.D., State Board of Health, Jacksonville, Fla., Director, Bureau of Tuberculosis Control

Charles G. Souder, M.D., D.P.H., Leesburg, Va., Health Officer, Loudoun County Health Dept.

Irving Starin, M.D., 1419 Jesup Ave., New York 52, N. Y., Junior Health Officer, New York City Dept. of Health

### *Laboratory Section*

Herman I. Cbinn, Ph.D., State Board of Health, Jacksonville, Fla., Principal Chemist

Percy H. Deal, M.S., 816 Rockledge, Topeka, Kans., Bacteriologist, State Board of Health

Edmund P. Finch, B.Sc., Hines Hospital, Bldg. 119, Clinical Lab., Hines, Ill., Asst. Chief, Clinical Laboratory

Marion Ledley, B.A., 320 Riverside Drive, New York, N. Y., Laboratory Technician

Robert E. Lind, B.S., Fitzsimons General Hospital Hqs. Co., MDETS, Denver 8, Colo., Instructor, Clinical Laboratory Medicine

Ivan Malek, M.D., Antoninska 6, Praha VII, Czechoslovakia, Asst. Professor, Dept. of Bacteriology, Charles University

Lt. Albert S. Michael, Sn.C., Fitzsimons General Hospital, MDETS, Denver 8, Colo., Instructor of Serology and Parasitology

J. Guillermo Riano, Calle 7, No. 11-88, Bogota, Colombia, S. A., Chief of Laboratory, Ministry of Hygiene

William W. Scheidegger, 1206 N. Calvert St., Baltimore 2, Md., Clinical Pathology Laboratory and X-Ray Technician, Rustless Iron & Steel Division, American Rolling Mill Co.

Peter J. Valaer, B.S., 3211 Adams Mill Rd., N.W., Washington 10, D. C., Assoc. Chemist, District of Columbia Health Dept.

Dr. Gonzalo Urgoiti, Velazquez 59, Madrid, Spain, Head, Bacteriological Research Dept., Iby Laboratories

### *Vital Statistics Section*

Josephine D. Cunningham, M.A., 1013 E. Rittenhouse St., Philadelphia 38, Pa., Statistician-Biometrician, U. S. Public Health Service

Olive G. Johnson, B.A., 4021 9th St., N.W., Washington 11, D. C., Public Health Analyst, U. S. Public Health Service

Louise P. Lawrence, 1841 Columbia Rd., Apt. 718, Washington 9, D. C., Personnel Methods Analyst, U. S. Public Health Service

Maryland Y. Pennell, M.S., 5204 Roosevelt St., Bethesda 14, Md., Health Economist, U. S. Public Health Service

Mildred A. Snyder, B.S., 576 Callan Ave., San Leandro, Calif., Public Health Statistician, Alameda County Health Dept.

### *Engineering Section*

Adolfo Crosby-Goicochea, Independencia 550, Trujillo, Peru, S. A., Engineer, Ministerio de Salud Publica y Asistencia Social

Clarence W. Farrier, Gunnison Homes, Inc., New Albany, Ind., Assistant to President

Walter Foote, 195 Schiller St., Elmhurst, Ill., Sanitarian, DuPage County Health Dept.

George R. Gaenslen, B.S., 323 St. Anthony Ave., San Antonio, Tex., Engineer in Industrial Hygiene, State Dept. of Health

Juan A. Granados, M.S., Calle 20, No. 85, Miramar, Habana, Cuba, Sanitary Engineer, Comision de Malaria de Cuba

Arthur L. LeClaire, 519 Lincoln St., Bakersfield, Calif., Registered Sanitarian, Kern County Health Dept.

Richard S. Mark, B.S., 31 South 2nd St., Lebanon, Pa., Sanitary Engineer (R), U. S. Public Health Service

Everett R. Mathews, M.S., 112 N. Adams Ave., Pierre, S. D., Sanitary Chemist, Div. of Sanitary Engineering, State Board of Health

John M. Rhoades, 441 S. Pineapple, Sarasota, Fla., President, Master Plumbers Association of Florida

Lyle H. Smith, M.S., 3603 Aldrich Ave., S., Minneapolis, Minn., Public Health Engineer, Div. of Sanitation, State Dept. of Health

Theodore L. Vander Velde, M.S., Dept. of Health, Lansing 4, Mich., Assistant Engineer

#### *Industrial Hygiene Section*

Isaias Balanzario-Rosas, M.D., M.P.H., Cerrada Vallarta 9, Mexico, D. F., Mexico, Chief of Medical Dept., Ministry of Public Health

Robert S. Nekomoto, M.S., Board of Health, Honolulu, Hawaii, Industrial Hygienist, Territorial Board of Health

#### *Food and Nutrition Section*

Bernice L. Anderson, M.S., 2108 N. Meridian, Indianapolis 2, Ind., Nutritionist, State Board of Health

Gaynold Carroll, B.S., 54 S. Cretin Ave., St. Paul 5, Minn., School Lunch Nutritionist, U. S. Dept. of Agriculture

Milcent L. Hathaway, Ph.D., 7105 New Hampshire Ave., Apt. 101, Takoma Park 12, Md., Nutrition Specialist, Bureau of Human Nutrition and Home Economics

Mary Rokahr, M.A., U. S. Dept. of Agric. Ext. Serv., Washington 25, D. C., Member, Committee on Hygiene of Housing, American Public Health Assn.

Florence W. Unash, M.S., 1027 Des Moines St., Des Moines 19, Iowa, Director, State Nutrition Program at Community Level, State Dept. of Health

#### *Maternal and Child Health Section*

Dolores Pérez-Marchand, M.D., Avenida Hostos 22, Ponce, Puerto Rico, Medical Officer, Ponce Medical Center, Public Health Unit

#### *Public Health Education Section*

Ruth S. Allen, Box 210, Jacksonville, Fla., Acting Director, Division of Health Information, State Board of Health

Isola M. Benedetti, B.S., R.N., 1005 Michigan Ave., N.E., Washington 17, D. C., Health Educator, District of Columbia Tuberculosis Assn.

Myrtle Clinebell, Fayette County Tuberculosis Assn., Fayetteville, W. Va., Exec. Secy.

Lloyd E. Dyer, B.S., 424 East First, Wichita, Kans., Men's Program Director, Wichita, Young Men's Christian Assn.

Ruth I. Egan, B.S., 17 Jefferson St., Lynn, Mass., Public Health Education Worker, North Metropolitan District, State Dept. of Public Health

Mary D. Ellington, A.B., 605 Volunteer Bldg., USPHS, Atlanta, Ga., Information Specialist (writer), Communicable Disease Center

Madge H. Longley, B.S., R.N., P. O. Box 55, Rockville, Md., Director, Montgomery County Health Fund

Ethel S. Palmer, City Hall, Newberg, Ore., Exec. Secy., Yamhill County Public Health Assn.

V. J. Sallak, 1790 Broadway, New York 19, N. Y., Director, Personnel Service, National Tuberculosis Assn.

Marvin T. Shields, M.S., 154 McClean St., Decatur, Ga., Health Education Coördinator, State Depts. of Health and Education

Wilson M. Wing, M.D., Rockefeller Foundation, 49 W. 49th St., New York, N. Y., Special Fellowship, Medical Care, International Health Division

Eloise Young, M.S.P.H., Florence County Health Dept., Florence, S. C., Health Educator

Sally J. Ziemba, B.S., R.N., 101 North Maybell, Tulsa, Okla., Educational Director, Hillcrest Memorial Hospital

#### *Public Health Nursing Section*

Gertrude A. Cushing, B.S., U. S. Public Health Service, Tuberculosis Control Div., Bethesda, Md., Senior Assistant Nurse Officer (R)

Henrietta Hanna, R.N., Truby Apts., Independence, Kans., Public Health Nursing Consultant, State Board of Health

Erne L. Hobson, R.N., 737 S. Wolcott St., Chicago 12, Ill., Area Supervising Nurse, Midwestern Agricultural Workers Health Assn.

Gladys A. Lee, R.N., 112 Kensington Ave., Jersey City, N. J., Part-time Instructor, Seton Hall College

Mary F. Luvisi, R.N., B.S., 114½ Cedar St., Daytona Beach, Fla., Supervisor of Nurses, Volusia County Health Unit

Mary A. Maher, R.N., B.S., 165 W. 46th St., New York, N. Y., Regional Public Health Nursing Consultant, Children's Bureau

Norma M. Miller, R.N., 700 W. Huron, Ann

Arbor, Mich., Student, School of Public Health, Univ. of Michigan  
 Mary Jane Minnis, Doddridge County Health Dept., West Union, W. Va., County Health Nurse  
 Mabel D. Stewart, R.N., 606 E. Washington Ave., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan

#### *Epidemiology Section*

Nicolina Falci, M.D., M.P.H., rua Pamplona 444, Sao Paulo, Brazil, S. A., In charge of the Control of Schistosomiasis, State Health Dept.  
 Paul Kapalas, M.D., M.P.H., 162 W. 54th St., New York, N. Y., Public Health Officer, Greek Ministry of Hygiene  
 Emil G. Klarmann, D.Sc., 153 Franklin St., Bloomfield, N. J., Vice-President in Charge of Research, Lehn and Fink Inc.  
 Marcus D. Kogel, M.D., Queens General Hospital, Jamaica 2, N. Y., Medical Superintendent  
 Fernando Lopez-Fernandez, M.D., 27 y L. Apt. 12, Havana, Cuba, Director, National Contagious Diseases Hospital "Las Animas"  
 Walter R. Lowry, U.S.N. Air Station, Fort Lauderdale, Fla., Sanitarian, Laboratory and Mosquito Control Officer  
 John C. Sphangos, M.D., M.P.H., Rockefeller Foundation, 49 W. 49th St., New York 20, N. Y., Rockefeller Foundation Fellow

#### *School Health Section*

Ruth E. Ellis, R.N., 1273 Woods Ave., Apt. 6,

East Los Angeles, Calif., School Nurse, Excelsior Union High School

#### *Dental Health Section*

Willard R. Bellinger, D.D.S., M.P.H., 1800 E. 21st St., Topeka, Kans., Assistant Director, Division of Dental Hygiene, State Board of Health  
 Ernest A. Branch, D.D.S., State Board of Health, Raleigh, N. C., Director, Div. of Oral Hygiene  
 Dorothy O'Brien, D.H., 420 6th Ave., N., Nashville 3, Tenn., Dental Hygienist, State Dept. of Public Health

#### *Unaffiliated*

John B. Cantrell, B.A., 224 W. Aeronca-A, Oklahoma City, Okla., Public Health Representative, U. S. Public Health Service  
 Henry S. Churchill, 19 W. 44th, New York 18, N. Y., Member, Committee on the Hygiene of Housing, American Public Health Assn.  
 Sgt. James A. Gilroy, Fitzsimons General Hospital, Hq. Co., MDETS, Denver 8, Colo., Instructor in Preventive Medicine, Anatomy and Physiology  
 Jean V. Hart, B.S., 406 Medford Center Bldg., Medford, Ore., President, Jackson County Public Health Assn.  
 Victor C. Rambo, Mungeli, Central Provinces, via Bilaspur, B. N. Ry., India, Superintendent, Christian Hospital, United Christian Missionary Society  
 Harry H. Stage, M.S., Bureau of Entomology, Washington 25, D. C., Assistant Chief in charge

### THE MERIT SYSTEM UNIT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION ANNOUNCES AN EXPANDED PROGRAM

*Consultation Services*—Through the addition to the staff of Charles B. Frasher, the Merit System Unit is now able to offer field consultation services to state and local merit system and civil service agencies and to the personnel management of health departments. Problems in personnel recruitment and selection, examination construction and administration, the application of merit system rules or civil service laws, and position classification are among the areas in which consultation is available. These new services are made possible by a grant from the National Founda-

tion for Infantile Paralysis, Inc., and will be provided without cost to agencies requesting them.

*Examinations* — Objective examinations may now be obtained in the major fields of administrative health, environmental sanitation (including engineering), health education, laboratory, medical social work, and public health nursing. Specialized material is also available in a number of smaller areas, namely, clinical pathology, entomology, physiotherapy, graduate nursing, food and drug chemistry, and x-ray technique.

There are two general plans for ob-

taining the Merit System Unit examinations. In accordance with the first of these, a new and individualized examination is compiled for the agency requesting it, on the basis of that agency's own job specifications. The advantage of this procedure is that the examination reflects the special needs and requirements of the locality in which it is to be used. The agency receives three typed copies of the examination with answer key, in final form, and ready for duplication. The charge for such examinations is determined at the rate of \$1 per item. Examinations for entering grades cost approximately \$110; for top positions, approximately \$175. When a series of examinations is prepared, however, for a number of classes of positions in any one field, the cost for individual examinations is proportionately reduced because of the possibility of using the same items in examinations for more than one class.

The second plan is especially intended for use where there are a small number of candidates for any one class of position. This plan enables the examining agency to obtain a mimeographed copy of the examination requested for each candidate. These examinations will not be tailor-made to meet the specifications of the particular agency but will have been compiled in

accordance with sound testing principles by the staff subject-matter and testing consultants on the basis of standard specifications for the various classes of positions. New editions of each test will be prepared periodically as the extent of their use warrants it. This service also includes scoring and analysis of the results. The charge for these examinations will be \$50 for the first 10 candidates examined for any one class, plus \$3.50 for each additional person examined.

All Merit System Unit examinations are highly confidential and are made available only with the understanding that they are not to be released or published in any form.

*Announcements of Examinations*—The Editor of the *American Journal of Public Health* will be glad to carry announcements of public health examinations being offered by personnel agencies. Copy must be received by the fifth of any month to be carried in the next month's issue.

*For Additional Information*—Write directly to Lillian D. Long, Ph.D., Associate Director, Merit System Unit, American Public Health Association, 1790 Broadway, New York 19, N. Y.

REGINALD M. ATWATER, M.D.

*Director*

*Merit System Unit*

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#### A.P.H.A. MEMBERSHIP DIRECTORY

The 1946 Membership Directory of the Association is at last a reality and every member is entitled to receive it without charge. Members who desire to receive a copy should send a post card or a letter to this effect to the Association office at 1790 Broadway, New York 19, N. Y.

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in September Journal)

**Wanted: Physician, Tuberculosis Specialist,** for sanatorium in Seward, Alaska. Salary \$550 per month, quarters furnished. Give all qualification. Write C. Earl Albrecht, M.D., Commissioner of Health, Juneau, Alaska.

**Wanted: Tuberculosis Specialist,** trained in public health, for Director, Division of Tuberculosis Control. Salary \$7,800. Write C. Earl Albrecht, M.D., Commissioner of Health, Territorial Department of Health, Juneau, Alaska.

**Wanted: Physician** with public health experience to act as Director, Division of Communicable Disease Control and Assistant to Commissioner of Health. Salary \$650 per month. Give all qualifications and experience. Write C. Earl Albrecht, M.D., Commissioner of Health, Juneau, Alaska.

**Wanted: Director, Division of Venereal Disease Control** in Bureau of Preventable Diseases. Headquarters Jacksonville. Salary \$5,400-\$7,200. Start well qualified man at \$6,000. Write State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida.

**Wanted: Medical Director** for Venereal Disease Rapid Treatment Center based on hospital ship in Jacksonville. Salary \$5,400-\$7,200. Start well qualified man at \$6,000. If bachelor, quarters aboard ship and meals at \$20 per month furnished. Write State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida.

**Wanted: Venereal Disease Control Physician** for Health Division. Training and experience in clinical, laboratory, and public health aspects of venereal disease control required. Full time. Civil Service. Salary \$377-\$425 per month. Write Department of Personnel, City of St. Louis, Mo., 14th and Market Streets.

**Wanted: Trained and Experienced Full-time Health Officers** for county health departments in California. Salaries

range from \$5,400 to \$7,200. California license required for employment. Address inquiries to Dr. Ellis D. Sox, Div. Local Health Service, State Dept. Public Health, 760 Market St., San Francisco, Calif.

**Wanted: Health Officer** in rural area, population 41,000, staff of 10. Beginning salary \$5,000 and travel allowance. Applications should be addressed to Dr. Paul S. Bauer, Alexander-Pulaski Bi-County Board of Health, Halliday Estate Bldg., Cairo, Ill.

**Wanted: Assistant Health Officer.** Salary \$5,100. Write Health Officer, Court House, San Bernardino, Calif.

**Wanted: Two full-time physicians.** Immediate appointment. Conduct several small venereal disease clinics. Weekly rotating schedule. Beginning salary \$4,200 plus travel expense. Appointment restricted to graduates United States and Canadian Class A Medical Schools, eligible licensure New Mexico. V.D. experience required. Men under fifty preferred. Write State Health Department, Santa Fe, New Mexico.

**Wanted: Public Health Physician** for city service. Can receive training on job. Beginning salary \$4,080 plus \$300 travel. Civil Service protection with retirement provisions. Write Dr. M. D. Ailes, Director of Health, Akron 8, Ohio.

**Wanted: Assistant in Health Division.** Training and experience in community health organization or public health education necessary. Salary \$3,000-\$3,500 depending on qualifications. Write Julia L. Groscop, Health Consultant, Council of Social Agencies, 311 South Juniper Street, Philadelphia 7, Pa.

**Wanted: Bacteriologist** for midwestern modern institutional laboratory. Teaching functions in nurses' training school as well as in contemplated school for laboratory technicians. Good journal library facilities. Candidates with mas-

ter's degree and some experience preferred. Maximum starting salary \$3,000. Write Box O, Employment Service, A.P.H.A.

**Wanted: Laboratory Technician** in Health Department Laboratory. Make routine bacteriological water analyses and bacteriological and chemical analyses of dairy products. College degree. At least one year in bacteriology, inorganic and organic chemistry. No experience required. Salary \$150 or more depending on qualifications. Write W. Howard Brown, Director, Food and Laboratory Division, Jacksonville Health Dept., 940 Main St., Jacksonville 2, Fla.

**Wanted: Young man** with Ph.D. major in bacteriology or physiology needed by food concern in southwestern Pennsylvania. One or two years' experience preferred. Write Box L, Employment Service, A.P.H.A.

**Wanted: Nutrition Workers** with graduate work in dietetics or nutrition and two or more years' experience for health program extension in Georgia. Starting salary \$2,880. Write Personnel Administrator, Georgia Dept. of Public Health, State Office Bldg., Atlanta 3, Ga.

The New Mexico Merit System Council announces unassembled periodic examinations for the following positions in the Department of Public Health:

Tuberculosis Control Officer..	\$400-\$500
District Health Officer.....	300- 400
Director, Sanitary Engineering and Sanitation .....	300- 400
Supervisor of Milk Sanitation..	250- 300
Supervisor of Food Sanitation..	250- 300
Sanitarian .....	175- 215
Venereal Disease Clinician.....	350- 450
Venereal Disease Lay Investigator .....	175- 215
P. H. Nurse Midwife Consultant .....	250- 300
Public Health Nurse Midwife..	200- 250
Public Health Nurse.....	175- 215
Graduate Nurse.....	165- 185
Associate Engineer.....	250- 300

**Wanted: Public Health Engineer or Sanitary Engineer** with public health engineering experience. Must be graduate in civil engineering with specialty in sanitary and municipal engineering from accredited college. Must have 1 year postgraduate course in public health engineering or 1 or 2 years' practical experience in public health department or U.S.P.H.S. Salary starts \$350 month plus travel expense. Write Dr. I. D. Johnson, Health Officer, Marin County Health Dept., 704 Fourth St., San Rafael, Calif.

**Wanted: Health Educator** with ability to work constructively with citizen groups in southern city with high percentage industrial workers and Negroes. Salary \$200 per month plus travel expenses. Write R. W. Garnett, M.D., Director of Public Health, Danville, Va.

**Wanted: Public Health Educators** with Master's degree from recognized school of public health, preferably experienced in community health councils. Positions available on both state and local levels. Write Dr. Arthur L. Ringle, State Director of Health, 1412 Smith Tower, Seattle 4, Wash.

**Wanted: Health education worker** for active community program sought by Tuberculosis Association in large western city. Attractive position open in agency closely related to official groups. Write Box H, Employment Service, A.P.H.A.

**Wanted: Industrial Hygiene Engineer.** Minimum of three years in public health engineering including two years in industrial hygiene engineering required. Beginning salary \$337 with maximum of \$417 in five years. Temporary appointment pending Civil Service examination. Also, industrial hygiene technician to assist in laboratory or field studies under supervision of the engineer or chemist. College degree, courses in chemistry or engineering and/or experience in industrial hygiene field work required. Beginning salary \$233 with \$288 maximum. Write A. V. Nasatir, M.D., Director, Division of Industrial Hygiene, Dept. of Health, 116 Temple St., Los Angeles 12, California.

**Alaska Territorial Department of Health** wants qualified sanitary engineers in the grades or Director of Division of Sanitation and Engineering and District Sanitary Engineer in Territorial Health Department. Must have bachelor's degree or higher in sanitary or public health engineering from college or university of recognized standing and eligibility for registration as professional engineer in Territory. Director must have 4 years' full-time employment in well organized agency in some phase of sanitary or public health engineering, at least 1 year of which shall have been in administrative capacity; district sanitary engineer must have at least 2 years' full-time employment in well organized agency in some phase of sanitary or public health engineering. Apply Alaska Territorial Dept. of Health, Box 1931, Juneau, Alaska.

**Wanted: Sanitarian** for Department of Health in New England residential suburb, 40,000 population. Preference given

applicants with specialized public health training or satisfactory experience in sanitation and public health work. Starting salary \$2,200-\$2,900 per year. Box W, Employment Service, A.P.H.A.

**Wanted:** Public Health Nurse or one wanting to learn public health nursing while at work under supervision. Salary \$160 per month. Write R. W. Garnett, M.D., Director of Public Health, Danville, Va.

**Wanted:** Public Health Nurses. Metropolitan area of Washington. Salary \$2,550 plus gasoline and oil. Write Mrs. E. Earle, Chief, Bureau of Nursing, Arlington County Health Department, 1800 North Edison Street, Arlington, Va.

**Wanted:** Two Public Health Nurses for generalized nursing program October 1, 1946. Salary \$200 per month for work week of 37½ hours. Car maintenance at six cents per mile. Write Richard Sears, M.D., Director, Muskegon City-County Health Department, Court House, Muskegon, Mich.

**Wanted:** Qualified public health nurse with tuberculosis experience needed by progressive voluntary agency with active community program. Write Box C, Employment Service, A.P.H.A.

**Wanted:** Public Health Nurses for staff positions in generalized public health nursing program located in semi-rural Marin County, near San Francisco. Salaries beginning \$200 and \$235 per month. California R.N., P.H.N. certificates, Health and Development credential required. Apply Dr. Irving D. Johnson, Health Officer, Marin County Health Dept., 704 Fourth St., San Rafael, Calif.

**Wanted:** Public Health Nurse with degree and public health experience for administrative position in newly organized cancer program. Salary \$3,100. Furnish own car, gas and oil furnished. Also public health nurse with degree and public health experience for educational program. Must own car. Salary \$31. Box B, Employment Service, A.P.H.A.

**Wanted:** Public Health Nurses for staff positions in generalized program. Salary \$1,800-\$2,400. Write: Director, Visiting Nurse Association, 1715 Crawford, Houston 3, Tex.

**Wanted:** Public Health Nurse for generalized public health nursing program in small southern city. Must be trained and qualified to plan work. Starting salary \$1,800 or more depending on qualifications, plus reasonable travel al-

lowance. Write Claude H. Ballard, Commissioner of Health, Florence, S. C.

**Wanted:** Supervisor for Visiting Nurse Association in New Jersey, 40 minutes from New York City. Fourteen staff nurses. Chest agency in National Welfare and Health Retirement Fund. Salary \$3,000. Must have adequate experience in field work, supervision and degree in public health nursing. Box V, Employment Service, A.P.H.A.

**Wanted:** County Public Health Nurses. Beginning salary \$190 month. Travel and expense allowed. Permanent. Write Miss Aileen Dyer, Director, Public Health Nursing Div., Oregon State Board of Health, 1022 S.W. 11th Ave., Portland 5, Ore.

**Wanted:** Public health nurse for staff position. Salary \$200-\$240, noon dinner allowance. Merit and retirement systems. Program includes generalized field services, interviewing in clinics and group teaching. Minimum requirement certificate of public health nursing. Write Director, Public Health Nursing, Kern County Dept. of Health, P. O. Box 120, Bakersfield, California.

**Wanted:** Staff nurses general, operating room and central supply room, excellent salary and maintenance, \$10 additional for evening and night duty. Apply: William A. Wyckoff, Administrator, T. J. Samson Community Hospital, Glasgow, Ky.

California State Department of Health announces examinations for Public Health Medical Officers Grades 1 and 2. Grade 1 Qualifications: Graduation from recognized medical school, completion of approved internship, two years' experience in practice of medicine inclusive of military medical experience, laboratory or research work, or teaching. Salary \$4,860-\$5,820. Appointees eligible for formal public health training. Grade 2 Qualifications: In addition approved internship, three years' public health experience. Full-time experience in preventive medicine in military service, or one year formal public health training, or two years' postgraduate training in accepted specialty may be substituted for two years' required experience. Salary \$5,460-\$6,660. Write Director, California State Dept. of Public Health, 760 Market Street, San Francisco, Calif., for application form.

**Wanted:** Qualified public health nurses for resort areas of Michigan, to help develop expanding programs of local health departments. Personnel policies written to offer staff members opportunities to



enjoy water and woodland sports and outdoor life year round. Positions open immediately for 10 staff nurses at salary range of \$2,100-\$2,220, 2 senior nurses at \$2,400 and 2 supervising nurses at \$2,700-\$3,000. Write for personnel form to Director, Northern Peninsula Office, Michigan Dept. of Health, Escanaba, Mich.

**Social Hygiene Educator:** College graduate with work in public health, sociology, nursing or related subjects and one year of suitable experience to do educational work in social hygiene for health department. Applicants must be not over 45 years of age, U. S. citizens, female. Beginning salary \$206.44. Write City Service Commission, City Hall, Milwaukee 2, Wisconsin, for further information and application blank. Examination will be conducted October near to residence of applicants. Closing date for filing applications October 23 (earlier if examination outside Milwaukee).

**Wanted: Public Health Laboratory Technician.** Salary \$215 per month to \$265 maximum. Civil Service position. Public Health Laboratory Technician's certificate at next State Personnel Board Examination required. Write Box X, Employment Service, A.P.H.A.

**Wanted: Health Officer** for Montgomery County (Central Illinois). Newly established health department; proposed staff of nine; population 35,000. Salary \$6,000-\$7,000 depending on qualifications, plus travel allowance. Write Roland R. Cross, M.D., Director, Illinois Dept. of Public Health, Springfield, Ill.

**Wanted: Qualified Public Health Nurse** for staff position in generalized program in Cortland, N. Y. Opportunity for rural and urban experience in County Health Dept. Transportation provided. Salary \$2,178-\$2,420. Write Cortland County Health Dept., Cortland, N. Y.

**Wanted: Laboratory Technician, female.** For 130 bed Tuberculosis Sanatorium in the Middle West. Experience in taking x-rays of the chest desirable but not essential to qualify for the position. Eight hour duty; Saturday afternoons and Sundays off. No night work. Salary \$150 per month with full maintenance. Give age, race, experience, and reference when applying. Write Box P, Employment Service, A.P.H.A.

#### Wanted:

1. **Director, Division** including Maternal and Child Health and School Health. Will have an assistant. Full responsibility for planning and developing maternal program and for school examinations. Fifteen health centers in area. Salary \$4,000-\$5,000, depending on qualifications and merit system approval.

2. **Director, Health Education.** To direct general public health education program, cooperating closely with departments of education and Chattanooga-Hamilton Co. Health Council. Considerable emphasis on tuberculosis control. Educational and public health training required (degree required). Salary \$3,000-\$3,600, depending on qualifications as above.

3. **Director, Tuberculosis Control Division.** Physician well trained and experienced in reading both photofluorographic and conventional type chest x-rays required. To be in charge of division including visible case register and related records, x-ray clinic, mobile unit and to consult with nursing staff of twenty. Salary \$4,000-\$5,000, depending on qualifications.

4. **Public Health Nurses, junior and senior staff nurses.** General public health program, urban, rural or combination under excellent supervision. Must have own automobiles. Salaries \$1,800-\$2,400, with extra mileage allowance.

Write Chattanooga-Hamilton County Health Department, Paul M. Golley, M.D., Director, Chattanooga, Tenn.

**Wanted: Three public health staff nurses.** Well organized unit and training base. Generalized service. Graduates without public health training \$1,920-\$2,400. Graduates with full year of public health training in recognized school \$2,100-\$2,640. Eligibility and classification to be cleared by State Merit System. Own car essential. Adequate travel allowance. Write Dr. D. D. Carr, Director, Topeka City-Shawnee County Health Dept., Topeka, Kans.

**Wanted: Physician** to head school health program in California city. Annual salary \$4,000. Salary for 11 months' service \$3,600. Write Box X, Employment Service, A.P.H.A.

**Wanted: Several Sanitarians** qualified in milk, food, and general sanitation in western state health department. Write Box Z, Employment Service, A.P.H.A.

## POSITIONS WANTED

Physician, four years' public health experience, administrative and clinical, experienced industrial medical examiner, seeks position with an industrial concern as preemployment examiner and health supervisor or a student health appointment in lower California, coastal area preferred. Write A-520, Employment Service, A.P.H.A.

Dentist, 30 years in practice, 13 years in public health work. Several years' executive experience. Now chief of large dental department in southern state hospital. Desires position in southwestern state tuberculosis or mental hospital, or in other public health dental institution. Available after November 30. Write M-465, Employment Service, A.P.H.A.

Health Educator experienced in community organization work plus university teaching and adult education. Wishes position in community organization work or with special community project in health education. Write Box H-520, Employment Service, A.P.H.A.

Pathologist, Board Diplomate, competent and experienced in pathologic anatomy, clinical pathology, bacteriology and tropical medicine; years of public health experience as laboratory director and research associate; consultant, professor and executive; numerous publications, excellent references. Age 40. L-472, Employment Service, A.P.H.A.

Bacteriologist - Immunologist desires permanent position in medical or public health bacteriology and immunology. Doctorate from Eastern university. Several years' research and teaching experience. Veteran. Write Box L-495, Employment Service, A.P.H.A.

Bacteriologist and Parasitologist with 4 years' experience as sanitarian and over 3 years' experience in Army medical and sanitary bacteriology, recently 1st Lt., Sanitary Corps, AUS, seeks position in public health laboratory or research in industrial bacteriology. Write E-490, Employment Service, A.P.H.A.

Bacteriologist - Serologist, thoroughly experienced and capable; teaching, public health and hospital diagnostic routine; excellent references. L-475, Employment Service, A.P.H.A.

R.N., B.S. Wide background of experience in all fields of promotion and health education with official and voluntary agencies. Ability to organize long-range programs and work effectively with staffs and board members. Seeks position in New York City or within commuting distance. Write Box N-386, Employment Service, A.P.H.A.

Parasitologist, M.S., female, five years' experience in research and routine laboratory work also in allied biological fields. Write L-500, Employment Service, A.P.H.A.

*Advertisement***Opportunities Available**

WANTED—(a) Physician to direct school health department; staff includes two full-time physicians, dental hygienists, twenty nurses; preferably someone interested in career in public health; large city in Southwest; \$4,400–\$6,000. (b) Tuberculosis specialist with health background; should be qualified to direct sanatorium of moderate size; \$500–\$700; Alaska. (c) Director of health department serving 41,000 people; staff of ten; Middle West. (d) Director of student health department; university having enrollment of 10,000; staff of four physicians; \$7,500; East. (e) Health commissioner; state health department, must be experienced in public health administration; South. (f) Woman physician for student health appointment; young women's college; approximately 2,000 students; new, well equipped infirmary, large dispensary; staff of five physicians; nine graduate nurses; East. **PH10-1** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—Health Educators (a) To join staff of department of preventive medicine and public health; state university; teaching experience desirable. (b) Generalized public health programs; duties include publicity, radio programs, film showings, public speaking and other activities of health education division. (c) State department of health; minimum of year of graduate work in field of public health with major emphasis on health education required; West. (d) Department of bacteriology and public health, liberal arts college; young man with Doctor of Public Health or Ph.D. required; duties include teaching hygiene and public health training of sanitarians and supervision of sanitary conditions on campus; West. **PH10-2** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Sanitarian thoroughly familiar with food handling industry to take charge of new school being established for food handlers; teaching experience required. (b) Sanitarian or chemist for research appointment with large industrial company planning expansion program of sanitation improvement. (c) Bacteriologist experienced or trained in public health and laboratory methods; B.S. degree and minimum year's experience required; Alaska; transportation paid from Seattle. (d) Sanitary engineer; duties consist of serving in advisory capacity in general overall sanitary and anti-malarial work of large industrial company; preferably someone free to travel. (e) Sanitarian particularly trained in rodent control; department of health, town of 40,000, South. **PH10-3** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Public health nurse to carry on educational program, clinics and tuberculin testing throughout county; will work directly under medical director of sanatorium in cooperation with county tuberculosis association; Chicago area. (b) Supervising nurse; duties consist of directing four field nurses, generalized program; duties include supervision of children attending parochial schools; \$255, transportation. (c) Supervisor of generalized public health program inaugurated three years ago; staff of ten nurses engaged in active program; preferably someone qualified to direct expansion program; South. (d) School nurse, public health schools, small town in western New York. (e) Director of Visiting Nurse Association now being organized; will start functioning November first; college town of 12,000, Middle West. (f) Public health nurse; duties principally in city schools; college town in Wisconsin. **PH10-4** The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

*Advertisement***Opportunities Wanted**

Young physician well qualified as health educator; B.S., M.D. and Master of Health degrees; several years, director of university health service where he has carried a rather heavy teaching load; recommended as an exceptionally fine teacher, clear thinker about problems of education and student welfare, able to stimulate students to high degree of activity; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young dentist, graduate of Western Reserve University School of Dentistry; several years' successful private practice; interested in teaching and public health dentistry; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; B.S., M.S. and Ph.D. degrees, state university; considerable work toward doctorate; 4 years' experience as health educator including year as director of health education in co-educational college; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitary engineer; A.B., M.S.P.H., B.S.C.E. degrees; experience includes several years as food chemist with large food company and eight years as sanitarian with city health department; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Bacteriologist, expecting early discharge from military service; B.S. (major: Biology) and Dr.P.H., with specialization in public health laboratory methods, eastern schools; several years in city health department engaged in research before entering service; duties in navy have been confined to bacteriological and immunological research; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nurse seeks administrative appointment; B.S. degree in nursing education; Public Health certificate; twelve years' public health nursing; past five years, director of generalized program in town of 75,000; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### STREPTOMYCIN DISTRIBUTION

Limited commercial distribution of streptomycin through designated hospitals for treatment of civilian patients began September 1, the Civilian Production Administration announced.

The plan, which is similar to that used initially for penicillin distribution, was authorized by amending Schedule 119 to Order M-300.

-CPA officials said that more than 1,600 general hospitals have been selected as depots for the drug and will supply other hospitals in their respective areas. They were selected with the assistance of an advisory panel including Dr. Chester S. Keefer, National Research Council; Dr. C. J. Van Slyke, U. S. Public Health Service; and Dr. Victor Johnson, American Medical Association. Pending their notification, the names of the depot hospitals were not released by the Chemicals Division.

Until now the small amount of streptomycin available has been distributed by CPA to meet the urgent needs of the Army, Navy, Public Health Service, Veterans Administration, and also to the National Research Council to carry on an integrated clinical research program to determine the conditions amenable to streptomycin treatment. Streptomycin producers have contributed nearly \$1,000,000 to finance the program carried on by the Council's Committee on Chemotherapeutic and Other Agents under the chairmanship of Dr. Chester S. Keefer.

Appeals should be made by the physician in charge of the case to Dr. Keefer, Evans Memorial Hospital, 65 East Newton Street, Boston, Mass.

Chemical Division officials emphasized that the distribution plan provides that depot hospitals place their orders direct with the designated sup-

pliers, an important difference from the plan used in the initial distribution of penicillin by the War Production Board.

So that the sharply limited supply of streptomycin will be of most use to the greatest number of patients, CPA recommends Dr. Keefer's report as a guide for use of the drug.

The Keefer report summarizes 1,500 cases reported by physicians from all parts of the United States. It particularly recommends use of the drug for treatment of tularemia, hemophilus influenzae infections, bacteremia due to Gram-negative organisms, urinary tract infections, and meningitis due to certain specific organisms. Streptomycin has been found to be of questionable value in typhoid fever, brucellosis and salmonella infections and to be ineffective in clostridia infections, malaria, rickettsial infections, virus infections and infections with mold and fungi.

The report includes tuberculosis among a number of diseases for which the drug is a helpful agent but states that in the treatment of these its status has not been definitely defined. It emphasizes that streptomycin will not replace any of the established forms of treatment and that it should not be used as a substitute for other forms of therapy.

### DR. DRAPER ASSIGNED TO RED CROSS

Warren F. Draper, M.D., Deputy Surgeon General of the U. S. Public Health Service since 1939, was assigned to the American Red Cross on September 1, 1946. As consultant to its Medical and Health Services, he will aid in the development of these services and in professional relationships throughout the United States. Dr.

Draper has been in the Service since his graduation from the Harvard Medical School, serving for 13 years as Assistant Surgeon General and for three years on loan to Virginia as State Health Commissioner. During the recent war he was loaned to the War Department, serving as Chief, Public Health Branch of civil affairs-military government from May, 1944, to September, 1945, with the rank of Major General. His duties in connection with the prevention of epidemic diseases were carried out in England, France, Belgium, Holland, and Germany.

#### ACADEMY OF OCCUPATIONAL MEDICINE FORMED

On June 26, at a meeting in the Hotel New Yorker, New York, the American Academy of Occupational Medicine was organized to improve the health of industrial workers, with improvement in occupational efficiency as a corollary. Coöperating with acceptable agencies that may further either directly or indirectly the physiologic well-being of the employed population, it will foster the prevention, diagnosis, treatment, and general care of occupational illnesses or injuries and institute research to encourage a better understanding of the pathogenesis of industrial diseases and improvement in methods of prevention and care. The results of these activities will be made available to interested groups.

#### KRADWELL FOUNDATION ORGANIZED

The Ada P. Kradwell Foundation has been organized in Wauwatosa, Wisc., to promote public health through the advancement of medical sciences, particularly in the fields of psychiatry, neurology, and allied branches of medicine. Dr. William T. Kradwell has created the organization in memory of his deceased wife. The diagnosis, treatment, care and cure of persons

suffering from psychiatric, neurologic, or related diseases will be undertaken at the Foundation and such expenses, incurred by patients who, in the opinion of the Board of Directors, are unable to pay, will be assumed by the Foundation. The group also plans to establish fellowships and scholarships for young physicians who, having completed their internships, desire further training in neurology, psychiatry, or related branches of medicine, or wish to pursue scientific research projects for graduate degrees at medical schools accredited by the American Medical Association. Publication through exhibits, books, talks, and radio addresses of scientific results obtained through this work is planned. The officers of the Foundation are Dr. William T. Kradwell, president; G. H. Schroeder, vice-president and treasurer, and Leon F. Foley, secretary.

#### DEPARTMENT OF PUBLIC HEALTH APPOINTMENTS AT YALE

Professor Ira V. Hiscock, Chairman of the Department of Public Health at Yale University School of Medicine, has announced the following recent appointments:

William R. Willard, M.D., Dr.P.H., as Assistant Professor of Public Health—formerly Acting Director of Health and Welfare Section of Public Health, U. S. Army, Korea; Senior Surgeon, U. S. Public Health Service (R); and Health Officer, Hagerstown, Md.

Charles C. Wilson, M.D., Professor of Public Health and Education—formerly Professor of Special Instruction, Teachers College, Columbia University.

M. Allen Pond, M.P.H., Assistant Professor of Public Health and Chief of Sanitation, University Health—formerly Senior Sanitary Engineer (R), U. S. Public Health Service, and Consultant of Federal Public Housing Authority.

Franz Goldmann, M.D., promoted to Clinical Professor, chief of medical care section.

A. N. Snoke, M.D., Professor of Hospital Administration (and Director, Grace-New Haven Community Hospital).

*Coöperating Departments and Schools:*

Elizabeth P. Rice, M.S., appointed Clinical Professor of Social Aspects of Medicine—Director of Medical Social Service, Grace-New Haven Hospital.

Alan Foord, M.D., Clinical Instructor in Pediatrics and Public Health, and Assistant Director, Grace-New Haven Hospital.

Eleanor M. King, M.P.H., Associate Professor of Public Health Nursing (jointly with Yale School of Nursing).

These changes will strengthen the teaching in health administration, in school, medical, and health education, in public health nursing, and in epidemiology, the latter in coöperation with Dr. John R. Paul and his staff in the Department of Preventive Medicine.

**CANCER INSTITUTE TRAINING**

The National Cancer Institute's training program, designed to increase the ranks of medical specialists in diagnosis and treatment of cancer, has been accelerated through funds recently appropriated by Congress resulting in 15 new appointments, the Public Health Service announced.

The training program is considered to be one of the most effective means of making better diagnostic treatment and services available for cancer patients. Although the program was begun a few months after the Institute was established in August, 1937, it was curtailed during the war.

Up to July 1, 1946, 82 physicians had received the specialized training provided by the traineeships awarded by the Institute. At that time, 7 physicians were still in training; 23 new trainees went on duty during July, and the 15 recommended for August will raise the total to 45. With its program currently expanding, it is expected that the total will be greatly increased by the end of the year.

The physicians spend from one to three years in training at a cancer hospital or in a hospital with a large cancer service. The new appointees

and the training centers where they will study are:

Drs. Milton Robbins, Maurice Weisberg, Max W. Mattes, and Leonard Ellenbogen, at Bellevue Hospital, New York.

Drs. William Cahan, Neil P. Beall, Lewis Guiss, Arthur James, Allen Minor, George Parks, Theodore Winship, and Oliver Moore, at the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York.

Drs. H. W. Mixer and Arnold Kremin, at University of Minnesota Hospital, Minneapolis, Minn., and Dr. Oscar Whiting, at Freedman's Hospital, Washington, D. C.

**NEW YORK STATE PLANS STATE-WIDE  
MODERNIZATION OF MENTAL  
HOSPITALS**

Along with the program to modernize and expand the state's institutional facilities so that overcrowding may be eliminated and provisions made for more adequate care of all patients admitted, the New York State Department of Mental Hygiene has developed plans further to improve the standards of care and treatment as well as prevention of mental disorders. These plans include:

- Modern medical and surgical buildings at 16 institutions
- Intensified research in the causes and cure of mental illness
- Increased use of shock therapies
- Special provision for the care of tuberculous mental patients at four regional centers
- More staff housing
- Better training facilities to meet the need for more psychiatric, nursing and social service personnel
- Additional clinics for prevention and after-care
- Extension of family care
- Improved food service for patients and employees

The building program for the mental institutions will be the largest item in the state departmental construction program as mapped by the Post-war Public Works Planning Commission. As soon as materials and man power become available, the department will launch a program of construction and reconstruction at the state's 28 mental

institutions for which projects estimated to cost over \$81,000,000 (on the basis of 1940 building costs) already have been approved by the Planning Commission. It is a long-term program which will take several years to accomplish, but work will be undertaken as rapidly as possible at critical points where the needs are most pressing, especially with reference to medical care facilities and relief of overcrowding.

#### UNIVERSITY OF CALIFORNIA EXTENSION COURSES

Courses in public health and public health nursing were included in the new fall schedule of evening courses which the University of California Extension opened in downtown Los Angeles.

Dr. K. H. Sutherland, District Health Officer for the Los Angeles County Health Department, is conducting a course in Public Health and Preventive Medicine. Public health nursing courses included a class in Industrial Hygiene for Nurses with Mrs. Olive Whitlock Klump as instructor, Industrial Nursing; Occupational Diseases with Dr. Rutherford Johnstone as instructor, and Economics and Management of the Ward Unit with Barbara Thompson as instructor. Numerous other courses of interest to nurses and particularly an expanded program of psychology classes were included in the university schedule.

#### HOSPITAL ADMINISTRATION COURSE AT THE UNIVERSITY OF MINNESOTA

A new course in hospital administration in the University of Minnesota's School of Public Health under a grant from the Kellogg Foundation has been established as a step toward meeting the great demand for trained hospital administrators.

The course, which began with the fall quarter, has been opened only to

students holding at least a bachelor's degree and has been limited at the outset to an enrollment of 20. Prospective hospital administrators will be required to complete two full academic years of study including one year of actual course work and one year of work on an internship basis in some hospital. Successful completion of the course will lead to a master's degree.

The Kellogg Foundation has awarded the university an initial grant of \$20,000 for the first year of the course. Terms of the agreement between the Foundation and the university call for additional grants of \$20,000 for each of the two following years. At the end of the first three years, if the course in hospital administration has demonstrated its value as a normal part of university activities, it is expected to become a permanent phase of the university's curriculum.

Plans for the program at the University of Minnesota called for the organization of a committee on hospital administration to consist of the Dean of the School of Business Administration, the Superintendent of University Hospitals and the Director of the School of Public Health. Specific courses to be included in the program were determined by this committee and were in four general fields: hospital organization and administration, public health, business administration, and social work.

#### NEW EFFORTS TO REDUCE DEATHS FROM HEART DISEASE

A recent news release of the Metropolitan Life Insurance Company compares the death rate for diseases of the heart and arteries during the period 1911-1915 and 1940-1944. A reduction of 37 per cent was noted among white females and 25 per cent among males in the latter period. Further reductions are thought to depend upon education of the public as to the pre-

vention, early recognition, and care of cardiac lesions.

In order to assist in the attainment of this goal, the Metropolitan Life Insurance Company is conducting a special campaign on heart disease during the fall and winter months. At that time, the company's more than 20,000 Field Representatives, in coöperation with official and voluntary agencies, will reach the homes of millions of policy holders with a recently published pamphlet, *Your Heart*, developed in coöperation with the American Heart Association. A lay educational film on heart disease is also being prepared. Distribution will be made to physicians of a packet in which will be included material of special interest to doctors, and a scientific exhibit on heart disease, first shown at the A.M.A. meeting in San Francisco, is available for state and local professional meetings.

#### NEW STUDIES ON VITAMINS

An advisory committee of eight scientists has been appointed by the National Vitamin Foundation Inc., to assist Dr. Robert Stanley Goodhart, Scientific Director, in the formulation of an overall research program on vitamins and to approve specific investigations to be conducted through grants-in-aid to various established institutions, continuing three such projects already under way. The Foundation replaces the Institute for Vitamin Research organized in 1944, and has established headquarters under Dr. Goodhart at 150 Broadway, New York.

In announcing the appointments and the Foundation's new name and goals, Dr. Theodore G. Klumpp, chairman of the Foundation's board of governor's stated the vitamin research program would be broad in scope "to permit the support of diverse projects likely to furnish information needed to fill in serious gaps in our knowledge of nutrition." Members of the committee

who have accepted to serve the Foundation are:

Dr. Otto A. Bessey  
Dr. George R. Cowgill  
Dr. Norman Jolliffe  
Dr. H. D. Kruse  
Dr. Carl V. Moore  
Dr. Severo Ochoa  
Dr. W. H. Sebrell  
Dr. Frederick F. Tisdall

Under grants totalling \$11,000, the three investigations already in progress in which the Foundation is interested were announced by the board of governors as:

A nutritional survey of the school children of Burlington, Vt., being conducted under the direction of Dr. Harold B. Pierce, Professor of Biochemistry, College of Medicine, University of Vermont.

Investigations of the rôle of folic acid in leukemia, being made by Dr. A. D. Welch, Professor of Pharmacology, Western Reserve University, and associates.

Quantitative studies of the effects of nutrition upon the susceptibility of mice to anaphylactic shock, being conducted by Dr. Frederick J. Moore, Department of Experimental Medicine, University of Southern California, School of Medicine. This work is planned as a first step in a long term program to identify the fundamental metabolic systems involved in anaphylaxis, allergy, and immunity.

In addition to these grants-in-aid, which are to be made ordinarily by the Foundation on January 1 and July 1 of each year, a grant of \$1,000 was made to the New York City Food and Nutrition Committee for a permanent exhibit on nutrition. This exhibit was placed on public display in Rockefeller Center during June of this year and is between public exhibits at the New York City Food and Nutrition Center, 125 Worth Street. Applications for grants-in-aid should be made to Dr. Goodhart at 150 Broadway, New York.



ROSENSTOCK MEMORIAL FOUNDATION  
OFFERS RESEARCH FELLOWSHIPS

The Rosenstock Memorial Foundation, Inc., founded in February, 1946, by Mrs. Sadie S. Rosenstock, is offering three Fellowships of \$2,000 per annum renewable upon application and approval for an additional year. The grants are limited to the support of full-time or part-time medical research to be conducted in hospitals with medical school affiliations in any of the five boroughs of New York City.

Fellowships will be limited to those who apply within three years of the completion of internship or residency, excluding time spent in military services. Applications must be endorsed by the director of the hospital where it is proposed that the research be conducted, and forwarded by the endorser to the Foundation at 42-16 West Street, Long Island City 1, New York, by November 1.

The Grants will be announced in December and the funds will be turned over to the hospitals involved.

HEALTH COUNCIL OF GREATER NEW  
YORK ORGANIZED

On May 17, the Health Council of Greater New York was incorporated, with E. Roland Harriman as President, and Kenneth D. Widdemer as Acting Executive Secretary. As outlined in the incorporation papers the purpose of the New Council are: "to promote the maintenance of health and the prevention of sickness throughout the City of New York and, to that end,

1. To develop and assist in developing a comprehensive, long-range plan for the improvement, extension and coordination of health services throughout the City of New York;

2. To encourage citizen understanding and active support of the programs and objectives of agencies, both public and private, which may from time to time exist in the health field;

3. To promote the organization of groups

of citizens on a borough, regional, district or neighborhood basis, and to interest such groups and medical, dental, nursing, teaching and other groups in borough, regional, district or neighborhood health programs; and to aid and assist such citizens and other groups in such programs;

4. To cooperate and maintain close relationship with the Department of Health of the City of New York and other official agencies concerned with health programs, in the improvement and extension of health services, health protection and dissemination of health information for the people of the City of New York;

5. To cooperate with other non-profit agencies in the health field, and to assist in and maintain such common services for health agencies in the City of New York as may from time to time be found helpful.

6. To develop, and aid in the development of, special health projects or demonstrations, and promote and carry on research in the health field and prepare and publish material relating to health matters; and

7. To provide a health information service for the people of the City of New York.

In its plan of organization it suggests that, once the Health Council is fully organized, it join with the Welfare Council of New York and the Hospital Council of Greater New York in forming a United Council of the three agencies. The Welfare Council, in existence since 1924, for many years had a Health Section and in recent years a joint Health and Welfare Section. It also has health sections in four of its five borough organizations. The Hospital Council was organized in 1938, following a hospital study of Greater New York. It is engaged in developing a master plan for hospital and related facilities in New York and in coordinating existing facilities in the light of the overall needs.

In addition to the President, Mr. Harriman, the officers of the New Health Council are: *Vice Presidents*, Mrs. Clarence G. Bachrach, Mrs. Jose M. Ferrer, I. Ogden Woodruff, M.D.; *Treasurer*, Harry P. Davidson; *Assistant Treasurer*, Mortimer J. Gleeson; *Secretary*, Mrs. Shepard Krech. Among

the thirty members of its Board of Directors are George Baehr, M.D., Bailey B. Burritt, Stanley P. Davies, Louis I. Dublin, Ph.D., Homer Folks, James Alexander Miller, M.D., Harry S. Mustard, M.D., Edward M. Bernecker, M.D., and Israel Weinstein, M.D., the latter two ex-officio as Hospital and Health Commissioners respectively.

DR. PARRAN APPOINTED WHO DELEGATE  
FROM THE UNITED STATES

President Truman has announced the appointment of Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, as United States delegate to the Interim Commission of the World Health Organization. Dr. H. van Zyle Hyde also of the Public Health Service, currently detailed to the Division of International Labor, Social, and Health Affairs, State Department, was named alternate delegate.

The Interim Commission will meet at Geneva, Switzerland, in November for the first of the meetings to be held every four months. The Commission will handle any urgent health problems that may arise before the World Health Organization gets underway and will formulate plans for setting up the permanent structure of the World Health Organization.

SANITARY CORPS—MEDICAL SERVICE  
CORPS

A news release from the Office of the Surgeon General, U. S. Army, dated August 2, 1946, explains the proposed plan to reorganize certain portions of the Medical Department. If the recommended plans are enacted into legislation, the Sanitary Corps will become part of a composite Medical Service Corps to be composed of the Sanitary Corps, Pharmacy Corps, and Medical Administrative Corps. According to information disseminated at another time, the promotion

schedule will not be the same as that in effect in the "Professional Corps," namely Medical, Dental, and Veterinary.

High tribute is paid to "the brilliant record set by some 3,000 Sanitary Corps officers during the war in maintaining the healthiest army in the world." The Surgeon General, in inviting specialists in sanitary engineering, entomology, nutrition, industrial hygiene, etc., to apply for commissions in the Regular Army, stated that it is his intention to utilize the technical or *administrative skill and training* of each officer to the fullest.

Requests for further information on direct commissions should be sent to the Personnel Section, Office of the Surgeon General, U. S. Army, Washington, D. C.

DIVISION OF HOSPITAL FACILITIES IN  
U. S. PUBLIC HEALTH SERVICE

Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, has announced the creation in the Service of a Division of Hospital Facilities. The new division will assist in carrying out the provisions of the Hospital Survey and Construction Act passed by the recent Congress. The director of the division is Vane M. Hoge, M.D., who has hitherto been head of the Hospital Facilities Section of the Bureau of State Services whose functions have been absorbed by the new division.

ASSOCIATION OF MILITARY SURGEONS

The Annual Convention of the Association of Military Surgeons of the United States will be held in Detroit, Mich., October 9-11, 1946. There is no registering fee.

Although most of the topics refer to strictly medical subjects, public health is included as one of the panels on the program. A special invitation is extended to all combat medical officers

and naval corps men to attend the convention as guests of the association.

Reservations should be made through Col. Burt R. Shurly, 1005 Stroh Bldg., Detroit 26, Mich.

#### ROBERT GOULD INSTITUTE FOR NUTRITIONAL RESEARCH

Announcement was made in August of the establishment of the Robert Gould Institute for Nutritional Research in Cincinnati (Carew Tower). It will conduct researches in human and animal nutrition of agricultural and animal by-products. It will engage in educational activities by training specialists in nutrition, with grants and scholarships for students who will undertake research at the Institute, and will provide research grants to educational and scientific institutions.

The director of the project is Dr. Arthur Lejwa, co-discoverer of the male sex hormone and internationally known for his work in nutrition and biochemistry.

The decision to endow a Foundation was prompted by researches which Robert Gould and his associates instituted in 1941 at the University of Kentucky to reclaim animal feed from by-products of industries using grain.

The Foundation is already in operation and the building of executive offices, laboratories, and library is being planned, as well as an experimental farm.

#### DEMEROL IS HABIT-FORMING

The *Journal of the American Medical Association* (July 13, 1946) calls attention to the fact that Demerol is habit-forming and that it was placed under strict control both in Germany and Argentina, where it has been in use for several years. H. J. Anslinger, Commissioner of Narcotics, Washington, D. C., wrote the article in protest against the June *Reader's Digest* article, "God's Own Medicine," by

Paul de Kruif. Here the author asserted, "The painfighting power of Demerol is as miraculous as that of morphine—without the opiate's danger of addiction." Commissioner Anslinger points out that his files contain numerous case histories of addiction involving the use of Demerol.

#### NORTH DAKOTA PUBLIC HEALTH ASSOCIATION MEETS

The Third Annual Meeting of the North Dakota Public Health Association was held at Bismarck on May 28 and 29, 1946. The attendance was gratifying. Francis C. Lawler, Sc.D., President of the Association, was Chairman of the conference, and officers elected for the new year were A. L. Bavone, President, Howard Hammond, Treasurer.

Dr. Lawler announced that application for affiliation with the American Public Health Association had been submitted.

#### ILLINOIS HEALTH EDUCATION PROGRAM

A Workshop in Health Education opened at the Southern Illinois Normal University on June 10 and continued until August 3 and also one at the Illinois State Normal University opened June 29 and continued until August 23. The workshops permitted the participants to develop specific projects based on their own teaching experience and, by comparisons and discussions, stimulated interest regarding the health of the whole child, the whole school and the whole community.

#### NEW MEXICO HEALTH FOUNDATION

Stuart Adler, M.D., Chairman of the Board of Trustees of the New Mexico Health Foundation, Albuquerque, N. M., has announced the gift by Mrs. Katrina McCormick Barnes, of funds for a foundation to be known as the New Mexico Health Foundation which has now been established. The purpose

of these funds is to help to correct some of the unfortunate health conditions known to exist in New Mexico. A trust fund of \$350,000 has been made available for the Foundation.

According to Dr. Adler, communities where the needs are greatest will receive help in a program to be developed and carried out in coöperation with the New Mexico State Department of Health and other agencies. The foundation desires to avoid overlapping in any phase of its health work and will endeavor to extend needed assistance, particularly in some of the remote and isolated areas where health services are now insufficient.

The trust fund will be administered by a Board of Trustees including, beside Dr. Adler, the following persons: Mrs. Gustave Bauman of Santa Fe; Dr. Edward Eyring, President of Highlands University, Las Vegas; John F. Simms, Sr., of Albuquerque, and Horace Barela of Albuquerque.

#### CORRECTION

In the News from the Field, August Journal, page 954, the John and Mary Markle Foundation is stated to have made grants during 1945 amounting to \$48,600, which should have been \$486,000.

#### PERSONALS

##### Central States

GEORGE F. CAMPANA, M.D., M.P.H.,\* recently State Health Officer of North Dakota, has been appointed Acting Director of the Division of Communicable Diseases in the New Hampshire State Department of Health, Concord.

L. T. COGGESHALL, M.D.,\* who recently has been on leave from the University of Michigan, School of Public Health, Ann Arbor, Mich., as Professor of Epidemiology and Chairman of the Department of

Tropical Diseases, has become Chairman of the Department of Medicine at the University of Chicago, effective July 1. Dr. Coggeshall has recently been released from the Medical Corps of the U. S. Navy with the rank of Captain.

LEO J. GEHRIG, M.D., of Mopeming, Minn., Assistant Surgeon, U. S. Public Health Service, has been lent to the Territorial Department of Health in Alaska to serve as consultant in tuberculosis control. It is planned to establish a central office for public health supervision of tuberculosis and to coördinate work of interested groups. A case finding program is also planned.

OPAL C. HARTLINE, Ph.D., M.P.H.,† of Ashley, Ill., has been appointed Chief of Public Health Education in the Illinois State Department of Public Health, Springfield, to succeed JEAN CHRISTOPHER,\* who has resigned.

ROBERT F. McNATTIN, M.D., of Chicago, Ill., has been named Director of the newly created Cancer Division of the Pennsylvania State Department of Health. The new unit was created under a recent legislative appropriation of \$100,000. The new division seeks to make facilities for the diagnosis and treatment of cancer accessible to every person in Pennsylvania.

STEPHEN K. MOLNAR, M.D.,† has been appointed Director of the Tuberculosis Division, Wayne County Health Department, Mich., effective July 1. Dr. Molnar returned from overseas duty last fall and completed the requirements for the M.P.H. degree at the School of Public Health, University of Michigan this spring under a Rockefeller Foundation Fellowship.

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

WALTER B. QUISENBERRY, M.D.,\* has been appointed Acting Head of the Department of Public Health and Preventive Medicine at the College of Medical Evangelists, Los Angeles, Calif. During the past year, he was Director of the Division of Venereal Diseases in the Nebraska State Health Department, having been loaned to Nebraska by the U. S. Public Health Service.

JOHN W. TOWEY, M.D., Medical Superintendent of the Pinecrest Sanitarium, Powers, Mich., for the last 25 years, has been appointed Chief of the Tuberculosis Division for the Columbus branch office of the Veterans Administration. Dr. Towey will be in charge of all technical and administrative aspects of the tuberculosis program in Veterans Administration hospitals of Ohio, Michigan and Kentucky.

HAROLD A. WHITTAKER\* has resigned as Chief of the Division of Sanitation of the Minnesota Department of Health and has joined the staff of the University of Minnesota School of Public Health as Professor of Public Health Engineering.

#### Eastern States

HILDING A. BENGS, M.D., of Camp Hill, Pa., has been named Head of the Bureau of Mental Health in the Pennsylvania State Department of Welfare, Harrisburg, succeeding WILLIAM C. SANDY, M.D., of Harrisburg, who retired in July, 1944. Dr. Bengs has been Acting Chief since November, 1944.

FLORENCE G. BLAKE, R.N., M.S., Assistant Professor of Pediatric Nursing at Yale University, has been appointed Assistant Professor in the faculty of nursing education at the University of Chicago, effective Oc-

tober, 1. Miss Blake will teach nursing care of children in coöperation with Bobs Roberts Hospital of the University Clinics.

GEORGE L. CANTZLAAR, of Brooklyn, N. Y., has been appointed Director of Publications and Public Relations for the New York State Department of Mental Hygiene.

JOHN E. FARRELL,\* Executive Secretary of the Providence Medical Association, the Rhode Island Medical Society, and the Council of the New England State Medical Societies, has been reappointed by Governor John O. Pastore for a five year term to the 5 member Advisory Council on Health for the State of Rhode Island.

L. L. HEDGEPEETH,\* Technical Assistant to the Vice President of the Pennsylvania Salt Manufacturing Company in Philadelphia, has accepted an appointment as Executive Secretary of the Virginia State Water Control Board, effective December 1.

JOHN M. HENDERSON\* has reported for permanent resident work as Professor of Sanitary Science at the Columbia University School of Public Health, effective August 1. His appointment dates from January 1, 1943, and he has been on leave of absence from Columbia serving with the U. S. Public Health Service Reserve. From February, 1944, until August 1, 1946, Professor Henderson was Chief of the Engineering Division of Malaria Control in War Areas Headquarters; in Atlanta, Ga.

#### CHANGES IN HEALTH PERSONNEL IN MAINE:

FRANK E. LESLIE, M.D., of Andover, has been appointed Mental Hygiene Adviser to the Board of Control of Iowa State Institutions, effective June 1. Dr. Leslie retired from government service in 1943, ending more than 25 years

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

of service in government mental institutions.

MAURICE A. PRIEST, M.D., of Augusta, has been appointed District Health Officer for the State Department of Health and Welfare, effective June 3.

DOROTHY B. NYSWANDER, PH.D.,† of the Inter-American Educational Foundation, Inc., in Washington, D. C., has been appointed Professor of Public Health Education in the University of California School of Public Health, Berkeley, Calif., effective September 9.

DALLAS PRATT, M.D., recently released from the Medical Corps of the Army of the United States, has been appointed Staff Consultant to the National Mental Health Foundation in Philadelphia. As staff consultant, Dr. Pratt will review educational material prepared by the Foundation and will assist in interpreting its program of improving standards of care and treatment for the mentally ill to the medical profession.

CATHERINE E. SHECKLER, R.N., M.P.H.,‡ Associate Professor of Public Health Nursing at the University of Pittsburgh, has been appointed to the faculty of nursing education at the University of Chicago as Assistant Professor, effective October 1. She will teach maternity nursing in coöperation with the Chicago Lying-in Hospital.

MARY A. STITES of New York, has been appointed Associate Professor of Medical Social Work at the Nashville School of Social Work, a coöperative enterprise of Vanderbilt University and Peabody and Scarritt Colleges.

REAR ADMIRAL DALLAS S. SUTTON (MC) USN (Rt), it is announced by the American Hospital Association, has been appointed to the staff of the Association's Washington

Service Bureau. He will be concerned with the exchange of information on standardization of civilian and federal hospitals, will study the program of hospital benefits to veterans, and will serve as liaison between the Association and the federal government in matters concerning the federal hospital program. Admiral Sutton was Assistant Surgeon General of the Navy from 1937 to 1941. Later he was Commanding Officer of the Portsmouth, Virginia, Naval Hospital, was in charge of construction of the Bethesda Naval Medical Center, and was inspector of east coast activities of the Naval Medical Department before his retirement in April, 1946.

C. RICHARD WALMER, M.D., has been appointed Medical Director of Industrial Hygiene at the Mellon Institute in Pittsburgh, Pa. He will direct the medical phases of the Foundation's work for the improvement of working conditions and the advancement of employee health in industry. For the past 5 years, Dr. Walmer has been associated with T. LYLE HAZLETT, M.D.,\* Medical Director at Westinghouse Electric Corporation, serving as Toxicologist and as a consulting specialist in industrial medicine.

#### Southern States

THERON H. BUTTERWORTH, PH.D.,\* who has been serving with the Milk and Food Section of the Sanitary Engineering Division, U. S. Public Health Service, has been transferred to the Office of Health Education, Bureau of State Services, U. S. Public Health Service, as Health Education Consultant.

COL. JOHN M. CALDWELL, MC, is the new chief of the Neuropsychiatry Consultants Division of the U. S.

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

Army, following BRIGADIER GENERAL WILLIAM C. MENNINGER's separation from the Army on June 27. Col. Caldwell returned to the United States on March 1 of this year after two years of service in the Pacific and reported to understudy General Menninger on May 1.

JAMES A. CRABTREE, M.D.,\* Medical Director of the U. S. Public Health Service, has been appointed Deputy Surgeon General of the U. S. Public Health Service, effective September 1. Since September 10, 1945, after his release as Deputy Director of Health of UNRRA, Dr. Crabtree has served as Special Assistant to the Surgeon General. In his new assignment, he will be second in command of the Public Health Service and will act as the Surgeon General in Dr. Parran's absence.

J. CLARENCE FUNK, Sc.D., has resigned as Director of Health Education in the Virginia Department of Health, Richmond, effective September 1. Dr. Funk has been associated with the department for 10 years.

COL. HAROLD B. GOTAAS\* has resigned as President of the Institute of Inter-American Affairs to become Professor of Sanitary Engineering at the University of California, Berkeley.

JACQUES P. GRAY, M.D., M.P.H.,\* who has been Dean of the Medical College of Virginia has been appointed Dean of the School of Medicine and Professor of Public Health Medicine of the University of Oklahoma, Oklahoma City, Okla., effective September 1.

CLAIR A. HENDERSON, M.D., has been awarded the 1945 Lucas trophy for having done the most worth while thing during the year for Savannah, where he is currently serving as City and Chatham County Health Officer.

He has been selected for his leadership of Savannah in the campaign against tuberculosis and venereal disease, which saw 71,149 persons voluntarily submit to chest x-rays and blood tests in a 45 day period last fall.

BARBARA A. HEWELL, M.D.,† Assistant Director of the Division of Research in Child Development, U. S. Children's Bureau, Washington, D. C., has been appointed Assistant Director of the Bureau of Maternal and Child Health and Crippled Children for the Hawaii Territorial Board of Health.

RAYMOND W. HOLBROOK, former Associate Director of Libraries at the University of Georgia, has been appointed Director of the Library of the Russell Sage Foundation in New York.

HENRY B. MAKOVER, M.D.,† until recently Senior Surgeon (R), U. S. Public Health Service, assigned as Chief, Health Services Branch, Office of Labor, War Food Administration, has been appointed Associate Director of the Montefiore Hospital in New York City and will begin his duties on September 1.

EDWARD C. MULLINIKS, M.D.,† of Kingsfoot, Tenn., has been named Director of the Washington County Health Department.

GRADIE R. ROWNTREE, M.D., M.P.H.,\* Deputy Director of Health, Louisville and Jefferson County Health Department and Associate Professor of Public Health, University of Louisville School of Medicine, has been given a leave of absence to do postgraduate work in public health administration and in general medicine at Columbia University.

FRANK E. WILSON, M.D.,† of Concord, N. C., has been recently appointed Deputy National Medical Director of the American National Red Cross. Dr. Wilson was discharged in Febru-

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

ary of this year with the rank of Colonel after 5 years' service with the Army Medical Corps.

### Western States

#### CHANGES IN HEALTH PERSONNEL IN CALIFORNIA:

JOHN L. PARKER, M.D., Brawley, has been named Health Officer of Imperial County, succeeding MIRIAM HUBBELL, M.D.,† El Centro.

JAMES L. DENNIS, M.D., Merced, has been appointed Health Officer of Merced County, succeeding BRUCE E. MCDOWELL, M.D.

ALLEN E. PRIEST, M.D., formerly of Klamath Falls, Ore., has been named Health Officer of Lassen County, succeeding JAMES W. CREVER, JR., M.D., of Susanville. Dr. Crever will continue to act as Health Officer for the city of Susanville.

LESTER J. SAWYER, M.D., San Francisco, is the new Health Officer of the city of Belvedere.

WILLIAM M. HAMMON, M.D., DR. P.H.,† Associate Professor of Epidemiology, University of California Medical School, San Francisco, has been appointed Dean of the University of California School of Public Health, Berkeley. He succeeds WALTER H. BROWN, M.D.,\* who recently retired.

EDWIN H. LENNETTE, M.D., attached to the Virus Laboratory, California State Department of Public Health, Los Angeles, as a member of the staff of the International Health Division of the Rockefeller Foundation, has been appointed Director of the Division of Microbiologic Research at Camp Detrick, Frederick, Md.

LYNN J. LULL, M.D.,\* has returned to his position as Director of Local Health Service and Medical Consultant for the Idaho Department of Public Health, Boise. Dr. Lull had

been lent to act as Superintendent of the State Hospital, South, at Blackfoot, whose management has now been taken over by a State Hospital Board. HAROLD E. DEDMAN, M.D., is Chairman of the Hospital Board and HARVEY H. BROWN, M.D., Superintendent of the hospital.

WILLIAM R. MURLIN, M.D., U. S. Public Health Service, once Acting Director of the Division of Tuberculosis Control, Oregon State Department of Health, Portland, has been named Survey Physician of the Tuberculosis Bureau of the Board of Health of Hawaii.

#### CHANGES IN HEALTH PERSONNEL IN WASHINGTON STATE:

HOWARD L. McMARTIN, M.D.,† formerly of Phoenix, Ariz., has been appointed Snohomish County Health Officer, succeeding CHARLES R. MUELLER, JR., M.D., who was transferred by the U. S. Public Health Service.

CONRAD E. ROSDAHL, M.D.,† Spokane, has been appointed Health Officer of Kittitas County, succeeding L. H. WALKER, D.D.

HAROLD B. STOUT, M.D., Brewster, has resigned as Health Officer of Douglas County.

SAM SPARHAWK, M.D.,† Burlington, Vt., has been placed in charge of the Lewis-Pacific Counties Department of Health.

HAROLD MARKS, M.D., Springfield, Ill., has been named Health Officer of Pierce County.

B. WILLIS JOHNSON, M.D., Everett, has been named Health Officer of Everett to succeed WILLIAM D. SMITH, M.D., resigned.

### DEATH

DENNETT L. RICHARDSON, M.D., of Providence, R. I., died on September

\* Fellow, A.P.H.A.

† Member, A.P.H.A.



8 at the age of 66. He had been Superintendent of the Charles V. Chapin Hospital in Providence for more than 30 years before he left in 1940 to become Superintendent of the Rhode Island Hospital. He held the latter post until January 1.

### CONFERENCES AND DATES

American Dietetic Association—28th Annual Meeting. Netherland Plaza, Cincinnati, O. October 14-18.

American Public Health Association—74th Annual Meeting. Headquarters—Public Auditorium, Cleveland, O. November 12-14.

Meetings of related organizations, November 11:

American School Health Association  
Association of Maternal and Child Health Directors

Association of Reserve Officers of the U. S. Public Health Service

Conference of Municipal Public Health Engineers

Conference of Professors of Preventive Medicine

Conference of State Directors of Health Education

Conference of State Sanitary Engineers

Conference of State and Provincial Public Health Laboratory Directors

Council of State Directors of Public Health Nursing

National Advisory Council of Cleveland Health Museum

National Committee of Health Council Executives

Public Health Cancer Association

American Public Welfare Association—Annual Round Table. Baltimore, Md. December 5-8.

American Water Works Association—

Southwest Section—Baccaneer Hotel, Galveston, Tex. October 14-17.

New England Section—Parker House, Boston, Mass. October 17.

California Section—Whitcomb Hotel and Civic Auditorium, San Francisco, Calif. October 23-25.

West Virginia Section—Hotel Pritchard, Huntington, W. Va. October 24-25.

Kentucky-Tennessee Section—Andrew Johnson Hotel, Knoxville, Tenn. October 28-30.

Iowa Section—Organization Meeting. Kirkwood Hotel, Des Moines, Ia. November 4-6.

New Jersey Section—Chelsea Hotel, Atlantic City, N. J. November 7-9.

Virginia Section—John Marshall Hotel, Richmond, Va. November 14-15.

Wisconsin Section—Northland Hotel, Green Bay, Wis. November 15-17.

North Carolina Section—Hotel Carolina, Raleigh, N. C. November 18-20.

Cuban and Florida Sections—Joint Meeting. Havana, Cuba. November 22-24.

International Association of Milk Sanitarians, Inc.—Annual Meeting. Seaside Hotel, Atlantic City, N. J. October 24-26.  
National Association of Housing Officials. Cleveland, O. October 10-12.

National Committee for Mental Hygiene—37th Annual Meeting. Hotel Pennsylvania, New York, N. Y. October 30-31.

National Malaria Society—29th Annual Meeting. Everglades Hotel, Miami, Fla. November 4-7.

National Society for the Prevention of Blindness—Conference. Hotel Pennsylvania, New York, N. Y. November 25-27.

Southern Branch, A.P.H.A.—conjointly with the Southern Medical Association. Miami, Fla. November 4-7.

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## A HELPING HAND

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## HEALTH OFFICERS



# DIXIE CUPS

# American Journal of Public Health

## and THE NATION'S HEALTH

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## Laboratory Procedures in Sanitary Milk Control\*

A. H. ROBERTSON, PH.D., F.A.P.H.A.

*Director of State Food Laboratory, Department of Agriculture and Markets,  
Albany, N. Y.*

THE above title suggests a constructive discussion of a difficult assignment; i.e., to summarize the evidence with regard to laboratory methods for the examination of milk as represented on the one hand by the U. S. Public Health Service,<sup>1</sup> and on the other by the Connecticut State Department of Health.<sup>2-4</sup> Each complete program of control, hereinafter identified as Plan A and Plan B respectively, has its distinctive features, some of which, unless better understood, may be regarded as controversial.

When referring to fluid market milk of "high quality" or of "high sanitary quality" and when fixing minimum standards of quality for acceptable milk and cream, public health sanitary codes invariably mean, among other things, products which are free from infectious bacteria and which have, and always have had, a low bacterial content. As herein used, unless otherwise qualified, the term "milk" includes both milk and cream intended for fluid market sales. The term "quality"

refers only to the bacterial condition of the sample. The term "sanitary" is used broadly to include both initial contamination with microorganisms and subsequent growth thereof.

The accomplishments should be considered, first on the basis of satisfying the minimum requirements specified under each plan, and second on the basis of the supplementary steps taken to assure conformity with the basic intent of each sanitary code. Under each plan, the administrator may require supplemental tests which are not inconsistent with the basic principles of the code and which do not lower the standards of quality or the operational procedures. Under both plans the sponsors endorse and actually encourage the application of useful quality tests which are not specifically required.

The best means to assure the safety of a supply will be discussed somewhat concisely. Because of limitations peculiar to each of the recognized procedures for estimating the bacterial content in different types of milk,<sup>5</sup> the more debatable features of each method will be briefly reviewed.

Although the problem for considera-

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\* Special Review Article prepared at the request of the Editorial Board.

tion is the relative effectiveness of the laboratory methods actually used to determine continuous compliance with the basic intent of the statute or code, obviously there are factors other than laboratory analyses which affect accomplishments. With the specific assignment, it is not possible to consider separately the rôle of each of these items. Because of the major rôles played by the inspection force and by the laboratory workers, it is logical to recognize these two subdivisions. Without the inspection force to investigate questionable conditions based upon laboratory determinations, the analyses would be relatively futile. Without the findings of fact, the inspection work would tend to be haphazard.

Mindful of the above considerations, it will become evident why tangible comparative evidence on achievements is practically impossible to obtain and why opinion must be substituted in part for factual evidence. Also it will become increasingly apparent that one cannot quote a few figures and percentages from reports to show with absolute fairness the actual accomplishments of control agencies. Without proper consideration of at least some of the determining factors other than laboratory analyses, this discussion would create a misconception of what constitutes sanitary milk control.

#### PLAN A

Under Plan A a milk ordinance and code<sup>1</sup> is recommended by the U. S. Public Health Service for voluntary adoption by states and communities; in order to encourage greater uniformity of milk control practices. Although subject to change as new information becomes available, Plan A represents the considered judgment of a group of technical experts familiar with various phases of the public health control of milk. To promote uniform enforcement, seminars are also arranged

periodically by district Public Health Service offices to instruct both in-service and local personnel.<sup>7</sup>

The recommended milk control ordinance is in effect (November, 1944) throughout Nevada and Alaska, as well as in 1,001 municipalities and 150 counties and districts in 36 other states and Canada. It has been adopted as state regulations governing all milk in 15 states and pasteurized milk only in 3 other states. All graded milk must comply with Public Health Service standards in 5 states, and all Grade A milk in 4 other states. Inclusion in the complete list of subscribers to the ordinance, or to portions thereof<sup>14</sup> does not necessarily imply that the ordinance is being satisfactorily enforced, and lack of enforcement does not bar inclusion. Enforcement is not a responsibility of the Public Health Service.

Compliance lists are published periodically, except during the war emergency, of communities which have adopted the ordinance and code and in which both the pasteurized milk and the raw milk compliance ratings are 90 per cent or more.<sup>8</sup> Inclusion in this list means that the state health department, upon request for inspection by the local community, has reported that the milk ordinance in effect in that community is the Public Health Service milk ordinance without downward revisions, or changes in grade names, or significant changes in the form of the ordinance. Upward modifications are permitted, but not recommended except as necessary to avoid conflict with the state laws. Regrading and degrading schemes are proposed to reward or to penalize respectively individual producers and dealers, as the case may require. Prior to determining compliance ratings, ratings are also assigned to enforcement methods in order to make certain that determinations are reasonably uniform.<sup>9, 10</sup>

The degree of enforcement according

to the latest published record,<sup>8</sup> where all Grade A milk, both raw and pasteurized, had a compliance rating of 90 per cent or more, lists 21 communities where all of the milk was pasteurized, 124 where varying amounts of raw and pasteurized were sold, and 19 where all of the milk sold was raw.

The enforcement unit and the testing laboratory are probably in the same administrative subdivision of the governmental agencies in most cases. Where more than one laboratory is responsible to any one agency, it is probable that annual inspection of such laboratories to determine conformity to standard practices is not mandatory prior to approval.<sup>4</sup> Furthermore, the uniformity of operations would be appreciably less if all of the laboratories alleged to be using A.P.H.A. methods were compared.<sup>11</sup> In connection with its responsibilities for the quality of milk used on interstate carriers, the Public Health Service has in recent years assisted many state health departments in establishing uniform supervision and approval of local laboratories analyzing supplies used on common carriers. Extension of these activities should go far to achieve a high degree of uniformity in laboratory operations and to make analyses in the many communities operating under Plan A comparable to that described under Plan B.<sup>12</sup>

Because the Public Health Service ordinance is placed in the hands of so many administrators, inspectors, and milk plant operators, some of whom undoubtedly are less well informed than others, more detailed directions appropriately have been published. *Bulletin 220* supplies this need with 44 pages of directions for guidance when inspecting the premises of the milk producer and the milk producer-distributor and 58 pages when inspecting the operations and equipment in the pasteurizing plant.<sup>1</sup>

During each grading period, which shall not exceed 6 months, each agency in order to conform under Plan A, (1) must inspect all dairy farms and all milk plants once, and (2) must examine four samples of milk and cream from each farm and from each milk plant.<sup>1</sup>

Various quality grades are established under Plan A for raw milk, depending upon the alternate use of standards expressed in terms of the Standard Plate Count, the Clump Microscopic Count, the Individual Microscopic Count, and the Methylene-Blue Reduction Time. The agar plate method is the only procedure authorized for use on pasteurized products. Determinations of conformance are based upon the average of four successive counts on samples from the same source taken on different days. In case determinations are made by one of the counting methods, the logarithmic average is employed.

Although the value of the phosphatase test is mentioned in a footnote<sup>1</sup> and also in one of the amendments (Dec. 3, 1942), its use is not required on pasteurized products. The coliform test is not referred to. The application of sterility tests<sup>6</sup> to determine the degree of sterility of the surfaces of single-service containers and container caps and covers and of milk bottles and cans is given due consideration.

When infractions of the ordinance are discovered, a farm or a milk plant may be degraded based either upon violations of operational practices or the failure to provide equipment and facilities on the premises as determined at the time of inspection or upon violations as determined by laboratory tests on the milk as offered for sale.<sup>1</sup> When the violator has shown his ability to correct the infraction, then upon application for regrading the supply may be regraded. Despite guidance provided by repeated seminars, provisions for regrading and degrading milk supplies

are inevitably subject to variations in discriminatory action locally. Where judiciously enforced, undoubtedly the results will be a reasonably equitable adjustment, according to the efforts made by the producer or by the retailer. When, and if, it can be demonstrated that milk from a certain source will satisfy the quality standards as determined by suitable laboratory tests, it is distinctively debatable whether all of the mandatory facilities, equipment, and operations itemized for dairy farms and for milk plants are positively essential.<sup>13</sup> Unless wisely administered, too much regimentation may occur under any plan.

Because of the wide adoption of the Public Health Service ordinance,<sup>14</sup> it has been impossible to examine the records obtained in each place individually or otherwise. No doubt, in some places the enforcement is distinctively above criticism because the administrator has supplemented his mandatory determinations with additional determinations which assure both greater safety and more uniform compliance.<sup>15</sup> In contrast, probably there are many who have not done so.<sup>8, 14</sup>

### PLAN B

Plan B<sup>2, 3, 4</sup> represents the considered judgment of qualified control officials in Connecticut, is mandatory only in its minimum statutory requirements, and is administered by a single enforcement officer for all fluid market milk and cream consumed in the state.

The jurisdictional area is the State of Connecticut with the adjacent milk shed. The area where the milk is consumed is confined to 4,965 square miles, the population (1940 census) was 1,709,242, and the greatest distance from a producer within the state to the State Laboratory is about 75 airline miles. There are about 5,000 farms within the state that produce milk for sale. The milk shed normally includes

adjacent areas in New York and Vermont.

The enforcement unit and the testing laboratory operate under two separate administrative subdivisions of the state government. The Laboratories of the State Department of Health assume the responsibility for the official examinations of all samples of milk and cream submitted by the Dairy and Food Commissioner. To aid in the work, the State Health Laboratory, after inspection and approval of facilities in other laboratories in the state to make certain specified determinations, examinations, and tests relative to the sanitary control of milk, issues certificates to certain qualifying laboratories.<sup>4</sup> In 1946 certificates were issued to seven municipal laboratories and to twelve others. Annual mandatory inspection before issuing new approvals assures a high degree of uniformity among laboratory operations.

Inspections of farms and of milk plants are made under the direction of the Dairy and Food Commissioner. No minimum frequency of official inspections or of official sampling is required by statute.

Various quality grades are designated for both raw and pasteurized milk depending upon a specified average number of bacterial colonies per ml. as determined by analyses made by the agar plate method.<sup>3</sup> The average means the logarithmic average of the last three consecutive samples taken on separate days. In some instances, the period of sampling is limited to an interval not exceeding 30 days and the determinations to be averaged, although they must be on "at least three separate samples," are required to be neither on samples taken on separate days nor on samples taken consecutively.<sup>3</sup>

No minimum frequency of laboratory examination of raw milk to be pasteurized is required by statute but the Dairy and Food Commissioner attempts

to make examinations quarterly. About 70 per cent of the raw bulk milk is sampled and examined quarterly by the buyers and about 30 per cent is sampled and examined quarterly in the State Health Laboratories at the direction of the Dairy and Food Commissioner.<sup>16</sup>

The laboratory examines essentially all samples of milk and cream by the direct microscopic method. The agar plate method is used only in special cases, such as on certified milk and on samples, the "bacterial counts" on which are to be reported, together with other determinations, to officials in the U. S. Army. All allegedly pasteurized milk samples are routinely examined by the phosphatase test and by the coliform test. Sterility tests on equipment are made only as circumstances indicate the need thereof.

When infractions of sanitary standards are found, the common procedure is to send a warning letter to the individual responsible for the sale of the milk. After making subsequent tests or examinations, if infractions continue to exist, the individual is asked to appear at a hearing. After making a third test or examination to determine whether or not infractions still exist and such infractions continue, then the sale of the milk from the farm or from the milk plant responsible for the condition is prohibited. Such prohibitions may be temporary or permanent, depending upon the steps taken by the operator to correct the unsatisfactory conditions.

Under Plan B, the selection of a qualified enforcement official who has had both training and experience in sanitary milk control problems is reasonably assured. Conferences are arranged periodically with inspectors so as to establish as high a degree of uniformity of operations as possible.

Despite the application of special laboratory tests to all samples of import

cream, there is some reason to believe that an abnormally high percentage of both raw and pasteurized cream, as judged by the records on samples examined, exceeds the standards. A record on samples of raw milk to be pasteurized shows a relatively low percentage of milk exceeding the standards. Based on samples examined, the percentage of retailed pasteurized milks which exceeded the standard was about twice as great as the percentage of violations among the samples of raw milks to be pasteurized. Obviously such percentages are subject to distortions caused by repeated examinations of samples from sources where violations have occurred or are more apt to occur.<sup>16</sup> Among other reasons for these percentages being high are, (1) the use of the direct microscopic method which makes possible the discovery of high count samples that ordinarily would escape detection by the agar plate method, and (2) the wartime inability to make as frequent inspections of premises as are needed to assure reasonable compliance.

#### GENERAL APPLICATIONS AND LIMITATIONS OF METHODS

None of the routine laboratory procedures for estimating the number of bacteria in milk<sup>5, 6</sup> will determine whether or not infectious bacteria are present. The best assurance of freedom from infectious bacteria is that provided by proper pasteurization of the milk.<sup>17-19</sup> The best assurance of pasteurization is that demonstrated by a satisfactory phosphatase test on the bottled pasteurized milk.<sup>20-23</sup> The best assurance of freedom from recontamination in freshly bottled milk after pasteurization is a satisfactory coliform test in 1.0 ml. portions of the bottled product.<sup>24-27</sup> In the case of raw milk to be consumed raw, the assurance is much less satisfactory<sup>28-31</sup> and can only be achieved in part by the careful

handling by healthy individuals of milk from cows that are not infected with tuberculosis,<sup>32, 33</sup> brucellosis,<sup>34</sup> etc., not suffering from pathogenic udder infections,<sup>35, 36</sup> streptococcal, staphylococcal, etc., and in which mastitis infections<sup>37</sup> are reduced to the practical minimum.

The degree of careless handling of either raw or pasteurized milk is generally reflected by the magnitude of the count. Furthermore, when milk is determined to be the sole cause of the illness among consumers, it is more common to find products (with a high bacterial content) which have been subjected to careless methods of production and handling responsible for the condition than products with a low bacterial content.<sup>38</sup>

In addition to assurances of satisfactory facilities, equipment and operations at the farms and in the plants, the administrator wants to know whether or not the milk conforms with the prescribed standards as determined by laboratory examination. By the selection of methods,<sup>5, 6</sup> the laboratory can determine objectively in raw milk the "bacterial count" and, when a high count is found, roughly the extent of and whether or not udder infection, utensil contamination, or poor cooling are among the causes thereof. By the selection of methods,<sup>5, 6</sup> the laboratory can determine objectively in pasteurized milk whether or not it has been pasteurized and the "bacterial count" therein and, when a high count is found, roughly the extent of thermotolerant, thermophilic, and psychrophilic contamination, and the degree of poor cooling, extended storage, or recontamination from equipment after pasteurization.

When samples fail to conform and the inspector and the laboratory are near the scene of operations, the objectionable condition(s) usually can be corrected more quickly. In some

cases, determinations can be made by the inspector on the receiving platform so as to prevent the acceptance of unsatisfactory milk.<sup>39, 40</sup> Where determinations are to be made in a distant laboratory, the need for circumstantial information concerning the sample increases. Without this information, the laboratory cannot always be expected to interpret correctly the cause(s) for the objectionable conditions. Promptness in supplying correctional information so that inspections may be guided properly and without delay is essential for an effective enforcement program. In most cases, however, the laboratory director can guide the inspection force in selecting the samples so that the determinations will provide the most useful information.

#### RECONCILING THE CHOICE OF METHODS WITH OBJECTIVES

Because the choice of methods for bacterial estimation will depend in part upon the destined use of the product, the advantages and limitations of each of the control measures will be considered separately for, (1) raw milk to be pasteurized, (2) pasteurized milk, and (3) raw milk to be consumed raw. Since determinations are influenced by limitations peculiar to each method, implications that one method is indisputably more accurate than another are unsound.<sup>5, 6, 41-47</sup> Because of these limitations, it is all the more important to consider the results of tests, as a means to classify the milk into 2, 3, or 4 groups or grades.<sup>13, 43</sup> The principle of grading is distinctively applicable to supplies of raw bulk milk and may be applied with discretion to retail supplies. Where a sample falls in a lower group or grade by any one method than it does by another, it is probable that the method which places it in the better class has failed to respond to some peculiar objectionable condition in the sample which the other method will de-

fect. Mindful of these limitations, the result by each of the methods should be regarded solely as a relative "estimate" or, perhaps more appropriately, as an index figure of the true bacterial content of the sample.<sup>5, 6, 48</sup>

When the colony count is determined by the agar plate method or when actual numerical counts of clumps or of individual bacteria are made by the direct microscopic method, allegorically the principle is like measuring a mile (the spread between very low count milk and very high count milk) with a relatively short measuring stick. By so doing, proper interpretations are often slighted by unnecessary attention to details both when approaching and when departing from various signposts. In contrast with such forms of measurement, the reduction type methods<sup>45, 46</sup> and a common application of the microscopic method,<sup>49</sup> permits the rapid grading of samples into 2, 3, or 4 groups, thereby making quality grades possible on about five times as many milks per unit of time as can be made by the counting methods. Irrespective of inherent limitations of the method and of the character of the milk to be examined, some regard the microscopic and the reduction type methods as distinctively less reliable procedures than the agar plate method for marking off subdivisions of the allegorical mile. By using certain "Screening Test" modifications,<sup>6</sup> the 5 to 1 ratio may be increased. Having obtained a quality grading first, then it is possible to spend a part of the time which has been saved directing operations to correct conditions where high counts are found. As a public health measure it is doubtful that the reporting of numerical "estimates" is strictly necessary. Where the "three out of four" method<sup>6</sup> to determine conformance is employed, the need for numerical "estimates" is even more remote, except to make proper borderline distinctions

and to provide definite values where penalty measures may be required.

Regardless of the method used to determine compliance, the classes could be selected so as to indicate to the producer or dealer, when the determinations are reported to him, (1) whether he generally has a wide margin of safety, (2) whether he is just within the "Acceptable" limit ("Acceptable," as determined by local standards), (3) whether he is a marginal violator, or (4) whether his milk is grossly contaminated.<sup>6</sup>

#### RAW MILK TO BE PASTEURIZED

The procedure which permits both rapid grading and the recognition objectively of the most probable cause(s) for poor quality milk, in case high counts are observed, is the direct microscopic method.<sup>6, 50</sup> The distinct advantage of this technic is (1) its adaptability both to grading the milk promptly and, when required, to counting the actual clumps of, or the individual, bacterial cells, and (2) the opportunity it affords simultaneously in case of high counts for the partial recognition in the milk film of bacterial types and cell arrangements which are characteristically associated with (1) faulty cooling, (2) utensil contamination, (3) udder infection, or (4) some combination of two or more of these items.<sup>51-53</sup> Determinations may be made either in the field or in the laboratory. Although a highly skilled operator is able to draw closer distinctions about conditions associated with udder infections,<sup>54</sup> a reasonably careful and conservative technician may be relied upon to distinguish the three conditions referred to above. Because of varying numbers of bacteria per clump, however, counts of clumps do not represent a *constant proportion* of the total bacterial contamination among different samples. Counts of clumps furnish a relative index of the total



bacterial content among samples.

The chief disadvantage of the microscopic technic is the fatiguing eye-strain involved<sup>6</sup> chiefly where *actual counts* of clumps or of bacteria are made and reported. This disadvantage is enhanced by the bacteria-per-field distribution variable which potentially increases in magnitude as the bacterial content decreases. Although this variable appreciably influences replicability among "estimates," it can be controlled in part by the number of fields examined. Ordinarily this variable need not be alarming because, strictly as a public health measure, actual estimates are required only in marginal cases to assure proper grade distinctions, or in special cases for averaging counts, or in case records may be used for court testimony. Stained milk preparations may be preserved indefinitely for purposes of reference, as demonstrations in court, check counting by other analysts, etc. Mindful that only 0.01 ml. of milk is spread over a 1 sq. cm. area and that the amount of milk solids recommended for routine examination, when grading,<sup>6</sup> varies from about 0.000002 to 0.00001 gm., it is amazing that different operators can duplicate results by the direct microscopic method as closely as they do. Failure to use the method in the most skillful manner possible is often credited as a limitation of the method.

Where tradition is a major influence, the agar plate method will be used to determine the bacterial condition in milks intended for pasteurization. The plate method is distinctively a laboratory procedure. About thirty years ago, its use was sanctified by a vote of confidence<sup>55</sup> as being less subject to errors than the direct microscopic method when used as an index of total bacterial contamination. Although still masquerading occasionally as a "total count of the bacteria present,"<sup>5, 6</sup> determinations by the agar plate method

have served almost since quality control began as an unprecedented guide for health departments to establish and to maintain quality grades of milk. Despite its limitations, the method has served well as a relative index of bacterial densities. The amount of milk deposited per plate varies from 0.0001 ml. (sometimes 0.00001 ml.) to 0.1 ml. Determinations are available only after the plates have been incubated for 48 hours, which in most cases is after the milk has been consumed. Only clumps containing viable bacteria will form colonies on the plate, and even these bacteria must be of a type which will form detectable colonies on the specially selected agar<sup>56-58</sup> when incubated at an arbitrarily chosen temperature.<sup>59, 60</sup> A count of the colonies, even if each clump formed a colony, would not represent a *constant proportion*<sup>5, 6</sup> of the total bacterial contamination among different samples of milk. Since the plate method fails to permit recognition objectively of the most probable cause(s) for high counts, when high count samples are recorded, the microscopic method may be used most satisfactorily for this purpose.

On low count milk the plate method can often be used with greater satisfaction than the other methods because the disadvantages of the microscopic and reduction type methods exceed the limitations of the former. As the counts continue to decrease, the corresponding advantages of the agar plate method increase to the point where its use is preferred to that of the other procedures. This point is often debated in case of the direct microscopic method. Obviously it depends almost exclusively upon the skill and willingness of the operator to use the microscopic procedure as it can be used as a counting technic.<sup>61, 62</sup> In proven low count milk the bacteria-per-clump variable is usually low, thereby increasing potentially the replicability among

"estimates" by the plate method, while the bacteria-per-field distribution variable increases as the counts become lower, thereby decreasing potentially, unless additional fields are examined, the replicability among "estimates" by the microscopic method. On first consideration, it appears desirable to use the method which provides minimum variance among replicate observations. If minimum variance alone were a true index of the reliability of methods to determine bacterial density, the reduction type methods would be used exclusively.

The reduction type methods offer the simplest form of grading tests recognized <sup>5, 6</sup> and are particularly adaptable where funds are limited. More samples can be graded per unit of time by the reduction methods than can be classified by any of the other procedures. Although the application is distinctively limited to classifying samples as to grade, both the methylene-blue reduction method <sup>63</sup> and the resazurin reduction method <sup>64, 65</sup> are applicable within reason to all quality grades of raw milk.

The amount of milk subjected to the test is 10 ml., which varies from 100 to 1,000,000 times the volume actually examined or tested when other recognized methods are used. Because the decolorization of the dye is influenced by the growth of each individual cell in so far as it is able to consume oxygen, determinations by the reduction methods may be expected to parallel closely the actual degree of contamination.<sup>6</sup> Since each of the reduction type methods fails to permit recognition objectively of the most probable cause(s) for high counts, when short reduction time intervals are recorded, the microscopic technic may be used most satisfactorily for this purpose.

Because coliform bacteria may be derived from such a variety of sources, because their presence in milk is not

necessarily indicative of fecal contamination, and because their rate of growth is roughly proportional to the rate of growth of the majority of the bacteria present, tests to determine their presence in raw milk intended for pasteurization and thereby to supplement determinations made by the counting, grading, and reduction type methods, are of little or no additional significance.<sup>66, 67</sup> A special interpretation is applied to the presence of coliform types of certified raw milk.

#### PASTEURIZED MILK

In addition to the common advantages and disadvantages outlined for the microscopic method under applications to raw milk, this method permits the detection of abnormal conditions in pasteurized products which otherwise would escape detection.<sup>68-72</sup> Dead and partially plasmolyzed bacterial cells in the films may retain their staining properties in varying degrees in freshly pasteurized milk, but such milk, when examined more than 6 hours after pasteurization, ordinarily will disclose so few bacteria which have been killed during the heating process that any such organisms, if present, will constitute an insignificant portion of the total number of stainable bacteria present. Some <sup>72</sup> have called attention to the misconception <sup>65</sup> regarding the presence of the so-called dead bacteria. Although others <sup>73</sup> have directed attention to the presence of the so-called "thermophilous bacteria" in pasteurized milk, apparently this idea was forgotten when methods for determining conformance to standards were considered.<sup>55</sup> There is good reason now to believe that many of the stainable, assumed-to-be-dead, bacteria in the films were living bacteria which failed to grow because the agar and incubation temperature would not permit their growth.<sup>69</sup>

Some who find pasteurized milk sup-

plies to be satisfactory by the direct microscopic method may interpret from such determinations that all of the raw milk before pasteurization necessarily must have been satisfactory also. Obviously this is a false assumption and the same would be equally true if the results of tests by the agar plate method or by the reduction type methods had been satisfactory. Unless records are obtained to show that the raw milk to be processed conforms to regulations, no pasteurized milk supply can be regarded as adequately controlled.

In general, the common advantages and disadvantages outlined for the agar plate method under application to raw milk, apply also to pasteurized products. Despite its limitations, as referred to previously under raw milk to be pasteurized, the method can often be used on proven very low count samples with greater satisfaction than the other methods because the disadvantages of the microscopic and reduction type methods often exceed the limitations of the former. In addition to determining the cause(s) of high counts by means of "line tests" and by the direct microscopic method, additional plates, when microscopic observations indicate the need thereof, should be incubated at appropriate temperatures to permit the growth of thermophilic<sup>70, 71</sup> and psychrophilic species<sup>74</sup> and of bacteria that survive pasteurization.<sup>69, 72</sup>

Although a modified application of the methylene-blue reduction methods, promulgated by the Ministry of Health, March 1, 1946, is used in Great Britain, this application to pasteurized products does not seem feasible in America. Thus far, the resazurin reduction method has not been found satisfactory on pasteurized products.

Unless phosphatase tests are made at regular intervals and, when a positive determination is discovered, additional

samples from the same source tested until it is assured that results may reasonably be expected to continue to be satisfactory, no pasteurized milk supply is adequately protected.<sup>20-23</sup>

Where coliform tests on freshly bottled pasteurized milk show positive determinations in 1.0 ml. quantities, no pasteurized milk can be regarded as satisfactory.<sup>24-26</sup> Since coliform species are invariably killed during the heat treatment, their presence in the freshly bottled product constitutes an unusually delicate test for recontamination, usually from the equipment somewhere between the pasteurizing and bottling operations. As the interval between bottling and the time of testing increases, it becomes increasingly difficult to determine objectively, when positive tests are discovered, whether the cause thereof was initial coliform contamination or subsequent growth of such contamination.

Where questionable procedures are used to sanitize the dairy utensils or the milk plant equipment, sterility tests may be used advantageously to disclose the exact piece of equipment which has been subjected to faulty sterilization.<sup>5, 6</sup>

#### RAW MILK TO BE CONSUMED RAW

The applications of the several quality test methods, as outlined under raw milk to be pasteurized, are equally applicable to raw milk to be consumed in the raw state. Because such milk is not protected by any heat treatment, it is essential that more frequent inspections of the producer's premises and of the equipment, personnel, and methods at the milk plant be made.<sup>28-37</sup> Furthermore, the milk should be produced by animals which are free from bovine tuberculosis, brucellosis, and other diseased conditions, and come from udders that are free from infection.

#### DISCUSSION OF APPLICATIONS

Without an exhaustive study of

records and without at some time taking an active part in the operations under each plan, it is impossible to summarize completely the importance of all of the operations and achievements. However, certain items are more outstanding than others, among which are the following:

1. Enforcement of the Public Health Service ordinance is a responsibility of the subscribing authorities. Some jurisdictions not listed in the 90 per cent conformance group undoubtedly are providing a higher assurance of safety than some that are listed. Some jurisdictions that are on the complete list obviously are not enforcing the essential provisions of the ordinance. Other jurisdictions may be enforcing the ordinance but have not solicited certification thereof. Undoubtedly many jurisdictions in the Americas, exclusive of those subscribing to the Public Health Service ordinance, have identical objectives and have equally as effective enforcement as those in the 90 per cent or higher conformance rating group. There are others where the reverse is true. Without enforcement even the best control plan becomes worthless. Without periodic ratings of enforcement methods, neither uniform enforcement nor compliance with standards can be assured among different jurisdictions.

2. *Bulletin 220* of the Public Health Service commendably provides a uniform basic guide for less well informed officials on many items essential in sanitary milk control. Supplemented by seminars provided by district Public Health Service offices to promote uniform enforcement by both in-service and local personnel, Plan A makes possible as high a degree of uniform enforcement as is reasonably obtainable under a volunteer adoption system. The Public Health Service, except as needed to provide milk for interstate carriers, has essentially no persuasive control in the various jurisdictions subscribing to the

ordinance except that engendered by publication of the results of accomplishments, i.e., by listing communities in which all Grade A milk sold therein has a 90 per cent or higher conformance rating with the standards prescribed. Enforcement methods are rated prior to determining compliance ratings. A listing periodically of those communities, at least by appropriate groups, according to the degree of compliance would be expected either to provide more uniform local enforcement or to retard adoption in communities where enforcement of the ordinance is apt to be less effective.

3. Several jurisdictions have supplemented the basic requirements in the Public Health Service ordinance by requiring the routine use of the phosphatase and coliform tests on all pasteurized milk and cream samples and thereby have provided a greater assurance of safety.

4. By stipulating that the agar plate method is the only one recognized for determining the conformance of pasteurized milk with the standards, the ordinance wholly ignores the possible detection of an appreciable number of samples which may contain large numbers of bacteria that fail to produce detectable colonies on the plates.

5. The requirement in Plan A that four samples of producer's milk shall be examined by an official agency during each 6 month period places a heavy burden upon finances and personnel in the respective administrations, especially those with large milk sheds. Because of the essential need for repeat samplings and repeat inspections in cases where samples fail to comply, the cost of control to provide 90 per cent compliance ratings may become almost prohibitive. The cost to public agencies can be reduced by placing a part of the routine responsibility on the licensed purchasing agency for inspecting producer's premises and for ex-

aming samples and maintaining each supply in an acceptable form.

6. Under plan B, essentially all bacterial estimates to determine compliance are reported in terms of clump microscopic counts. Since the original law as well as the rules and regulations adopted by the Milk Regulation Board provide minimum standards for quality in terms of "standard plate count bacterial colonies," and since there is no record that either body, but more especially the legislature, has modified its original intent of the precise manner in which compliance shall be determined, it is doubtful that conformance is determined legally in the State of Connecticut unless tests are made by a method which provides for expressing the results directly in terms of "standard plate count bacterial colonies." There is no record that the legislature has reconsidered or that it has authorized the use of substitute standards for the equivalence in quality in terms of results by another method.

7. The manner of reporting by the Laboratory of the State Department of Health in terms of clump microscopic counts was agreed upon as acceptable to the Dairy and Food Commissioner. Probably results of tests by the two methods have been compared to show the fairness of the clump microscopic count standard as an interchangeable measure of quality with the legislative standard for proven low count pasteurized milk. The standard clump microscopic count in terms of 200,000 per ml. for retail Grade A raw milk probably is a liberal interpretation for the equivalence in quality of the legal agar plate count standard. The use of the microscopic method is not criticised but the specific authority to ignore the statutory provisions appears to be lacking.

8. Records would indicate a distinct need for more frequent routine sampling. This applies both to producer's

milk and even more particularly to the retailed milk and cream. The repeated finding of more than 10 per cent of the samples which fail to comply indicates that the cause for the high count, perhaps influenced by relapsing tendencies in the plant between samplings, has not been eliminated.

9. Some methods of examination reveal more promptly and more completely than other methods the information needed, e.g., whether or not the bacterial content is excessive and, in case of a high count, the most probable cause(s) thereof. Despite the value of prompt determinations, the need for a reliable index figure of the total bacterial population cannot be ignored. The use of methods which delay reports and which lack completeness is not always consistent with the basic intent of regulations. When it is established that more useful methods can be judiciously employed to speed up determinations, to assure a higher degree of safety, and to indicate more consistently the total bacterial population in the milk, it is distinctively a responsibility of the administration to provide for amending such inflexible portions of the regulations as may obstruct the accomplishment of the basic intent of the code.

10. Where a quality standard for a product is fixed in terms of results by two or more methods, the official standards should be interchangeable in so far as it is possible to make them so.

11. Since the values obtained by any of the official methods do not represent an actual count of the bacteria present, or even a constant proportion of the bacterial contamination in the samples, the results of determinations may be looked upon essentially as relative index figures of the true bacterial content of the sample. For this reason the figures so obtained can more logically be grouped into grades or classes indicating major differences in

sanitary quality instead of being regarded with mathematical precision. In the absence of precise values, instead of averaging the determinations, the use of the "3 out of 4" method,<sup>6</sup> in order to ascertain compliance, is a simple and practical substitute for averages. As a public health measure, the need for reporting actual numerical "estimates" of the bacteria may be confined chiefly to borderline cases to assure proper grade assignments and to the preparation of records where court testimony may be required.

12. Where determinations in the form of "estimates" are needed, frequently those made by the plate method, especially among proven low count samples, vary less among replicate values than those commonly obtained by the microscopic method. Where a sufficient number of fields are examined, this variance among replicates, even on proven low count samples, may be reduced, if needed, so that it does not exceed that obtained by the plate method. When samples which supposedly have a low count as determined by the plate method are examined microscopically and are proved to contain appreciably more bacteria than the "Standard Plate Count" discloses, the importance of replicability among plate counts as a measure of reliability to determine conformance is distinctively reduced. Furthermore, a high variance among replicates has never been shown to jeopardize public health. Despite the relapsing tendency to regard replicability among counts as synonymous with accuracy, the agar plate method will continue to be a useful procedure for indicating the degree of contamination in proven low count milk.

#### CONCLUSIONS

Under either the U. S. Public Health Service Ordinance and Code (Plan A) or under the Connecticut State Department of Health Program (Plan B), the

fundamental objectives of maintaining the highest possible assurance of safety and continuous conformance to the standards for low count milk have not been as fully achieved as might be expected.

Plan A would be improved by:

1. Requiring the routine testing of all samples of allegedly pasteurized milk using the phosphatase test and the coliform test.
2. Requiring a microscopic examination of all raw samples which fail to comply, especially when field inspectional methods fail to disclose the cause for high counts or short reduction times.
3. Requiring routinely a microscopic examination of all pasteurized samples to determine whether or not high count samples escape detection by the plate method.
4. Permitting the use, where determinations have been checked periodically and found satisfactory, of routine plant reports on inspections and analyses of samples by licensed purchasing agencies in lieu of official inspections and analyses.

Plan B would be improved by:

1. Securing proper legislation fixing, or allowing the Dairy and Food Commissioner to fix by official order, standards for bacterial density in terms of results by methods which are to be used officially for the determination of compliance with the statute.
2. Providing for more frequent routine inspections and examinations of samples, with prompt repeat inspections and repeat examinations of samples in cases of non-compliance until continuous conformance can be reasonably assured.

#### REFERENCES

1. Milk Ordinance and Code. *U.S.P.H.S., Pub. Health Bull.* 220, Edition 1939.
2. Mickle, F. L., and Borman, E. K. The Connecticut Three-Point Laboratory Program as an Aid to Control of Pasteurized Milk. *J. Milk Tech.*, 6:231, 1943.
3. *Dairy Laws of the State of Connecticut*. Dairy and Food Commission, Hartford, Conn., Revision Oct. 1, 1945.
4. *The Sanitary Code of the State of Connecticut*. Conn. State Dept. of Health, Hartford, Conn., Sept., 1945.
5. *Standard Methods for the Examination of Dairy Products*. 8th Ed. Amer. Pub. Health Assn., New York, 1941.
6. *Standard Methods for Dairy Products*, 9th Ed. In preparation. Amer. Pub. Health Assn., New York, 1946.
7. Andrews, J. Comment, Submitted July 16, 1946.
8. Report on Market Milk Supplies of Public Health Service Milk Ordinance Communities. Compliance—During January 1, 1941, to December 31,

1942. *Pub. Health Rep.*, 58:320, 1943; and Other Similar Records Published Periodically in the *Public Health Reports*.

9. Report on Market-Milk Supplies of Certain Urban Communities. Appendix—Sanitation Ratings of Milk Sheds. *Pub. Health Rep.*, 53:1386, 1938.

10. Fuchs, A. W. Comment, Submitted July 16, 1946.

11. Black, L. A. Surveys of Milk Laboratories in War Areas in the United States. *U.S.P.H.S., Reprint 2522, Pub. Health Rep.*, 58:1605, 1641, 1681, 1943.

12. Black, L. A. Personal Communication. July 22, 1946.

13. Brew, J. D. Milk Quality as Determined by Present Dairy Score Cards. *New York State Agr. Exp. Sta., Bull.* 398, 1915.

14. List of American Communities in Which the Milk Ordinance Recommended by the Public Health Service Is in Effect. U. S. Public Health Service, Release, Nov., 1944.

15. Anderson, C. W., and Gunderson, N. O. *Milk Control Program*. Dept. of Public Health, Rockford, Ill., Release Rec'd March 15, 1946.

16. Mickie, F. L. Personal Communication. May 7, 1946.

17. Park, W. H. Thermal Death Points of Pathogenic Bacteria in Milk. *A.J.P.H.*, 27:36, 1927.

18. North, C. E., and Park, W. H. Standards for Pasteurization. *Am. J. Hyg.*, 7:147, 1927.

19. North, C. E., et al. Commercial Pasteurization. *Pub. Health Bull.*, 147, 1925.

20. Kay, H. D., and Neave, F. K. The Phosphatase Test for Pasteurized Milk. *J. Dairy Res.*, 6:191, 1935.

21. Scherer, H. A Rapid Phosphomonoesterase Test for Control of Dairy Pasteurization. *J. Dairy Sci.*, 21:21, 1938.

22. Gilcreas, F. W. Report on Tests for Pasteurization in Dairy Products. *J. Assoc. Off. Agr. Chem.*, 21:372, 1938.

23. Burgwald, L. H., and Giberson, E. M. An Evaluation of the Various Procedures for Making Phosphatase Tests. *J. Milk Tech.*, 1(7):11, 1938.

24. McCrady, M. H., and Langevin, E. M. The Coli-aerogenes Determination in Pasteurization Control. *J. Dairy Sci.*, 15:321, 1932.

25. Chilson, W. H., Yale, M. W., and Eglinton, R. Detecting Recontamination of Pasteurized Milk by Bacteriological Methods. *J. Dairy Sci.*, 19:337, 1936.

26. McCrady, M. H., and Archambault, J. Examining Dairy Products for Members of the Escherichia-Aerobacter Group. *A.J.P.H.*, 24:122, 1934.

27. Buchhinder, L., and Fertig, J. W. Preliminary Report on Coliform Studies of Pasteurized Milk and Milk Products. New York State Assoc. Milk Sanitarians, 19th Ann. Rep., 1945, p. 103.

28. Armstrong, C., and Parran, T., Jr. Further Studies on the Importance of Milk and Milk Products as a Factor in the Causation of Outbreaks of Disease in the United States. *Pub. Health Rep.*, Suppl. 62, 1927, and Successive Ann. Mimeo. Lists on Milk-Borne Disease Outbreaks.

29. Brooks, P. B., et al. Report of Committee on Communicable Diseases Affecting Man. *J. Milk Tech.*, 5:141, 1942.

30. The American Association of Medical Milk Commissions, Inc., *Methods and Standards for the Production of Certified Milk*, June 19, 1944.

31. Dolman, C. E. Present Status of Milk-Borne Disease Hazards. *Canad. Pub. Health J.*, 32:183, 1941.

32. Rosenau, M. J. The Thermal Death Points of Pathogenic Micro-Organisms in Milk. *Hyg. Lab. Bull.*, 42, 1908.

33. Wight, A. E. Present Status of Bovine Tuberculosis Eradication Program. *U. S. Livestock Sanit. Assoc. Proc.* (1944), 48:208, 1945.

34. Giltner, W. Brucellosis, A Public Health Problem. *Michigan Agr. Exp. Sta., Memoir 1*, 1934.

35. Frost, W. D., et al. Types of Hemolytic Streptococci in Certified Milk. *J. Infect. Dis.*, 40:698, 1927.

36. Brown, J. H. Significance of the Hemolytic Streptococci Found in Milk. *Cornell Vet.*, 27:100, 1937.

37. Moore, E. V. Controlling Mastitis. Radio address, WGY, Schenectady, N. Y., May 2, 1946.

38. Park, W. H. The Great Bacterial Contamination of the Milk of Cities. Can It Be Lessened by the Action of Health Authorities? *J. Hyg. (Cambridge, Eng.)*, 1:391, 1901.

39. Tiedeman, W. D. The Role of Platform Tests and Farm Inspections in Milk Control. *J. Milk Tech.*, 1(5):17, 1938.

40. Breed, R. S. Simplification of Laboratory Control Procedures for Market Milk. *A.J.P.H.*, 33:386, 1943.

41. Breed, R. S., and Stocking, W. A., Jr. The Accuracy of Bacterial Counts from Milk Samples. *New York Agr. Exp. Sta., Tech. Bull.* 75, 1920.

42. Robertson, A. H. The Relation Between Bacterial Counts from Milk as Obtained by Microscopic and Plate Methods. *New York Agr. Exp. Sta., Tech. Bull.* 86, 1921.

43. Wilson, G. S., et al. The Bacteriological Grading of Milk. Medical Research Council, *Spec. Rep. Ser. No. 206*, His Majesty's Stationery Office, London, England, 1935.

44. Malcolm, J. F. The Plate Method for Estimating the Bacterial Content of Milk—The Limitations of Procedure in Common Use, with Suggested Improvements. *J. Dairy Res.*, 4:91, 1932.

45. Abele, C. A. The Methylene-Blue Reduction Test as a Means of Estimating the Bacterial Content of Milk, to Determine Its Suitability for Pasteurization or as a Basis for Grading. *J. Milk Tech.*, 8:67, 1945.

46. Frayer, J. M. The Resazurin Test—A Preliminary Study. *Vermont Agr. Exp. Sta. Bull.* 435, 1938.

47. Johns, C. K. Recent Canadian Research on the Resazurin Test. *Internat. Assoc. Milk Dealers, 34th Year. Assoc. Bull.*, Jan. 26, 1942, p. 256.

48. Breed, R. S., and Brew, J. D. The Bacterial "Count"—An Estimate Capable of Accurate Interpretation. *A.J.P.H.*, 35:683, 1945.

49. Breed, R. S., and Brew, J. D. The Control of Bacteria in Market Milk by Direct Microscopic Examination. *New York Agr. Exp. Sta., Bull.* 443, 1917.

50. Breed, R. S. The Determination of the Number of Bacteria in Milk by Direct Microscopic Examination. *Centralbl. f. Bakt.*, II Abt., 30:337, 1911.

51. Whiting, W. A. The Relation between the Clumps of Bacteria Found in Market Milk and the Flora of Dairy Utensils. *New York Agr. Exp. Sta., Tech. Bull.* 98, 1925.

52. Breed, R. S. The Microscopic Appearance of Unpasteurized Market Milk and Cream. *New York Agr. Exp. Sta., Bull.* 566, 1929.

53. Ferguson, J. The Significance of Long-Chained Streptococci in Breed Smears of Market Milk. *Cornell Vet.*, 31:183, 1941.

54. Levowitz, D. Personal Communication, Feb. 27, 1946.

55. New York Milk Committee, Report of Commission on Milk Standards. *U.S.P.H.S., Reprint 386*, 1917.

56. Bowers, C. S., and Hucker, G. J. The Com-

position of Media in the Bacteriological Analysis of Milk. *New York Agr. Exp. Sta., Tech. Bull.* 228, 1935.

57. Yale, M. W. Standard Agar Counts as Compared with Counts on Improved Agars at 32° C. *A.J.P.H.*, 28:148, 1938.

58. Abele, C. A., and Damon, S. R. A Comparison of Plate Counts on Raw Milk on the Old Standard Nutrient Agar and on the New Standard Tryptone-Glucose-Extract Milk Agar. *J. Milk Tech.*, 2:222, 1939.

59. Pederson, C. S., and Breed, R. S. Accuracy of Plate Counts Made from Milk Products as Affected by the Temperature of Incubation. *A.J.P.H.*, 30: 162, 1942.

60. Yale, M. W., and Pederson, C. S. Optimum Temperature of Incubation for Standard Methods of Milk Analysis as Influenced by the Medium. *A.J.P.H.*, 26:344, 1936.

61. Brew, J. D., and Dotterer, W. D. The Number of Bacteria in Milk. *New York Agr. Exp. Sta., Bull.* 439, 1917.

62. Ward, A. R. Controlling Milk Plant Operations by Microscopic Counts. The Mathews Company, *Dairy Research Bureau Bull.*, 23:(2), (3), pp. 5, 9, 1944.

63. Barthel, Chr. Verwendbarkeit der Reduktaseprobe zur Beurteilung der Hygienischen Beschaffenheit der Milch. *Ztschr. f. Untersuch. d. Nahrungs u. Genussmittel*, 25:385, 1908.

64. Ramsdell, G. A., et al. Investigation of Resazurin as an Indicator of the Sanitary Condition of Milk. *J. Dairy Sci.*, 18:705, 1935.

65. Thornton, H. R., et al. The Reduction of Resazurin in Milk and Aqueous Solutions. *Canad. J. Res., Sect. B*, 19:39, 1941.

66. Yale, M. W., and Eglinton, R. The Value of the Colon Test as a Means of Detecting Unsanitary Conditions on the Farm. *Internat. Assoc. Dairy & Milk Inspectors, 24th Ann. Rep.*, 1935, p. 116.

67. Yale, M. W. *Bacteria of the Escherichia-Aerobacter Group in Dairy Products*. B. W. Hammer Panegyric Collegiate Press, Inc., 1937, p. 197.

68. Breed, R. S. Heat-Resistant and Heat-Loving Bacteria in Their Relation to the Pasteurization of Milk. *New York Agr. Exp. Sta., Bull* 559, 1928.

69. Breed, R. S. Thermophilic Bacteria in Milk Pasteurized by the Holder Process. *New York Agr. Exp. Sta., Tech. Bull.* 191, 1932.

70. Yale, M. W., and Kelly, C. D. Thermophilic Bacteria in Milk Pasteurized by the High-Temperature, Short-Time Process. *New York Agr. Exp. Sta., Bull.* 630, 1933.

71. Hileman, J. L. Thermoduric Bacteria in Pasteurized Milk. *J. Dairy Sci.*, 23:1143, 1940.

72. Ward, A. R., and Myers, C. E. Influence of Dead Bacteria on Microscopic Counts of Pasteurized Milk. *A.J.P.H.*, 27:899, 1937.

73. Conn, H. W. *Bacteria in Milk and Its Products*. P. Blakiston's Son & Co., 1903, pp. 29, 90.

74. Robinton, E. D., Borman, E. K., and Mickle, F. L. Preliminary Bacteriological Study of Market Cream. *J. Milk Tech.*, 4:253, 1941.

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AMERICAN PUBLIC HEALTH ASSOCIATION



# Training Public Health Personnel from Other Countries in the United States

CHARLES E. SHEPARD, M.D., F.A.P.H.A., AND  
WILLIAM W. PETER, M.D., Dr.P.H., F.A.P.H.A.

*Senior Surgeon (R) U.S.P.H.S. and Former Director; and Director, Training Division, Institute of Inter-American Affairs, Washington, D. C.*

EXPERIENCES during the war have focussed attention on the value of trained public health personnel. Never in history has public health asserted a more significant rôle in war. This has been evident especially in the control of typhus and sanitary operations in Africa and Italy and in the control of tropical diseases in the Pacific and Latin American areas. It has been evidenced too in the excellent standards of public health maintained in our own war congested cities and industrial areas. For this splendid record we are indebted to a nucleus of well trained workers who usually proceeded under considerable difficulty and who, in many instances, were obliged to train personnel in other countries to carry on the work.

In the post-war period there is a demand throughout the world for trained public health personnel. The need is both obvious and urgent. Natural barriers to communication have been unalterably lowered and this alone is creating unprecedented problems in the transmission of endemic diseases. The usual controls of communicable disease have been thrown out of gear by massive shifts of population, by problems of displaced peoples, and by concomitant lowering of sanitary standards. Inadequate nutrition and epidemic disease are symbiotic. Sanitary safeguards in many countries have been disrupted by bombing and by breaking

down of normal maintenance. Worst of all, the supply of trained public health workers in many countries has been cut off at the source by a deterioration of training facilities. To be sure, the medical corps of armies of occupation and the medical division of the UNNRA are attempting to meet these problems by the assignment of United States trained public health personnel and by efforts to train nationals. The Institute of Inter-American Affairs is doing a similar job in the Latin American countries. While these agencies are accomplishing much, often against bitter odds, their work is largely temporary. Their efforts are not always accepted whole-heartedly by other governments because the work is done by "foreign" personnel and methods. The work must be continued by national trained personnel if results are to be enduring.

Public health protection in many countries can be sustained only by the rapid reestablishment of national training facilities and by the training of personnel in other countries where facilities have not been too much disturbed by war. For some time to come, the United States will offer the greatest hope of providing this training for public health workers from other countries. Fortunately, our schools of public health and other training resources have survived the war and have even made progress during this period. The

progress was due partly, in fact, to the acceptance of students from Latin America. The experience in handling the men from other American republics has been valuable in teaching us how to deal with the problems of students from other parts of the world.

Considerable responsibility is attached to such a program. Students from abroad cannot be managed as we would handle our own students. Yet the success of such a program will mean much to the future of public health throughout the world, will raise the prestige of United States public health and will do much to cultivate international coöperation in this field. Since most of the problems involved in the training of Latin American students under the Institute training program are basic to the training of public health workers from other parts of the world, the authors believe that a description of the training program of the Institute of Inter-American Affairs and of the problems encountered will be helpful as a guide to the management of workers from other countries who come to the United States for training.

#### TRAINING PROGRAM OF THE INSTITUTE OF INTER-AMERICAN AFFAIRS

The training program of the Institute developed from coöperative agreements signed by the United States and other republics of this hemisphere as an outgrowth of the Good Neighbor policy. It was included in the activities of the Office of the Coordinator of Inter-American Affairs which was created as a war emergency measure to solidify the economic interests of the western hemisphere. Nelson Rockefeller, the Coordinator, was asked to give all possible aid to the protection and improvement of public health in areas surrounding our military bases established in the other American republics for the common defense of the hemisphere. He was also asked to coöperate in developing

public health work in areas within these countries where vital materials were available to replace those lost when Japan took possession of the South Pacific Islands.

This twofold health and sanitation and food supply program was placed in charge of Major General George C. Dunham who was assigned to the Coordinator's Office by the Surgeon General of the United States Army. Agreements were drafted by Dr. Dunham and were made with eighteen of these republics, whereby mutually supported public health programs were to be carried out under jointly appropriated funds. In 1945 Dr. Dunham was succeeded by Col. Harold B. Gotaas as President of the Institute of Inter-American Affairs.

During the first half of the agreed upon five year program the funds contributed by the United States exceeded those provided by the Latin American countries. For the latter half, however, the position is already reversed. It is expected that by the end of the period these countries will be carrying out these programs from their own funds. Public health technicians from the United States were sent to the various countries as administrators and specialists to help develop this program. The work was to be concerned primarily with the improvement of sanitation facilities, construction and operation of health centers, and the control of malaria and other endemic diseases in strategic areas. The improvement of methods of agriculture was also stressed.

It soon became apparent that there would be no continuity after these U.S.A. technicians were withdrawn, unless nationals could be trained to take over the management of projects. Consequently, efforts were made to provide in-service training, to establish local training centers, and to train some of each country's most promising public health and agricultural workers in the United States. Funds were provided by Con-

gress for the specific purpose of training these men in the United States. The training program will continue until the coöperative agreements expire in 1948. The first trainees in public health, sanitary engineering, medical sciences, nursing, and agriculture began to arrive in June, 1943. Since that time 620 have completed or are now pursuing their studies in the United States. It is estimated that 715 study and travel grants under IIAA will have been completed when the agreements expire.

Applications are submitted by Institute representatives in the various countries, the Training Division of IIAA is responsible for selection, professional placement, State Department clearance, travel arrangements, stipends and other payments, and personal supervision.

Activities of the Training Division are not confined to the handling of trainees in public health specialties. For Chile, where all medical and public health work is under governmental control, the division formerly arranged grants in clinical medicine with parallel observations of public health activities. The Brazilian government set aside special funds for grants in medical specialties, all of which are handled by the division. In Paraguay and certain Central American countries it seemed desirable to provide grants in the basic medical sciences in order to promote medical education as an indirect benefit to public health. A few hospital administrators were accepted from countries where hospital care is controlled by the ministry of health. A few nursing administrators and educators were accepted for similar reasons. A group of nursing sisters and another group of social service workers were provided with special programs in United States hospitals and schools of social work. A special program was developed for a group of sixteen health educators from as many countries at the new school of

public health at the University of California.

The Training Division has also handled 88 nutritionists and agriculturists as a service to the Food Supply Division of the Institute of Inter-American Affairs. These people came from countries where coöperative agreements in the agricultural field similar to the health and sanitation agreements had been set up by the Institute. The Department of Agriculture assisted in arranging study programs for this group while the Training Division handled travel arrangements and personal supervision.

The majority of grants provide for study in the various specialties of public health. The nature of study varies according to the specific needs of the country and the type of work being conducted there under coöperative agreement. Most of the trainees are assigned to schools of public health where they follow the formal pattern leading toward degrees of public health or sanitary engineering. The next largest group comes for practical instruction in public health laboratories, health centers, tuberculosis sanatoria, etc. Short periods of observation are provided for a few visitors whose experience and distinction in public health warrant special dispensation.

Before accepting the candidate, the Training Division submits a copy of the application or a sketch of professional background to the school of public health or other authority under whose sponsorship the study is to be undertaken. Every effort is made to place the applicant in accordance with his special needs as determined by the work he will be called upon to do when he returns home. When approval has been received from the sponsoring authority, the Training Division makes detailed arrangements for diplomatic clearance, travel, payment of stipends, tuition fees and allowances for text-

books. The number of details involved in these arrangements is surprising. Staff members of the division constantly supervise and assist the visitors by field visits and by a continual flow of personal correspondence. This constant contact has been imperative in the interest of promoting good will and in assuring the governments that the purposes of the program are being fulfilled.

The experiences of this program form a novel chapter in the history of public health training. Never before has the government of the United States supported a policy of training public health workers from other countries. Never before has such an elaborate procedure been set up to accommodate these visitors. Never before have our training facilities been called upon to receive so many students from outside our own country. The development and maintenance of such a program have not been easy. On the one hand it has been necessary to find placement to meet individual needs of a group with diverse professional backgrounds; on the other hand, it has been essential to establish and maintain good will between the visitors and our own people. It has been necessary to do this at a time when our institutions were subject to trying wartime pressures and were involved in preserving basic teaching standards with reduced personnel.

The program is succeeding only because of the generous and unselfish cooperation of the public health profession. On every hand its members are responding with a cordial desire to be helpful and with a willingness to undergo considerable personal sacrifice. Some of our public health leaders are wondering if this sacrifice to visitors from abroad is worth while. It is not easy for the busy administrator to explain the details of his program to someone whose professional grasp may be limited and whose command of English is even more limited. In the professional

schools these visitors do not fit easily into group teaching methods, but require considerable individual instruction. Behind the polite and sometimes casual mask of these students is a sincere thirst for information and a desire to put this new knowledge to work with the limited tools available. Co-operating professional workers in this country would feel amply rewarded if they could see what these students are doing to promote public health when they return to their countries. There is no doubt that most of our visitors have been inspired by personal contacts and stimulated by their studies and observations. It is evident from our visits to returned Institute trainees that public health in their countries is already reflecting the benefits of United States methods and the personalities of our public health leaders.

#### PROBLEMS ARISING IN TRAINING PERSONNEL FROM OTHER COUNTRIES

Several types of problems have arisen in connection with the work of the Training Division of the Institute of Inter-American Affairs. Some had been foreseen, some were unpredicted, and others arose as a result of wartime conditions. But most of these problems will attend efforts to train professional workers from any other country. The experience of the Training Division should be useful in any such future efforts. The authors here enumerate general types of problems encountered in the Institute program, accompanied by suggestions which may aid in future procedures to accommodate students from other countries.

*Selection*—The most serious failures in the Institute training program have arisen from faulty selection of candidates. In spite of every effort on the part of our representatives in these countries to choose deserving men, occasionally we received students whose selfish interests predominated, whose political ambitions were greater than their interest in public health and the welfare of their coun-

tries, or whose age or inexperience proved to be insurmountable handicaps. Once such a student is received, he becomes a burden to his sponsor, is constantly unhappy in his work, and is apt to infect others with his dissatisfaction. Our best candidates are those who are sincerely interested in the welfare of their country, who have sound educational backgrounds, and desire improvement, and who recognize the difficulties involved in orientation to the customs of another country.

Before accepting a candidate from abroad, the sponsor should examine carefully his professional credentials with special attention to educational background, nature of employment, and type of training desired. Recommendations are most important. It is fairly safe to accept an applicant who has been recommended by an international agency with representatives abroad, such as the Institute of Inter-American Affairs, the Rockefeller Foundation, etc. It is possible that in the future such a candidate can be certified by the health section of the United Nations. Meanwhile, public health administrators should hesitate to accept candidates from other countries unless their professional background is known or unless they are certified by an international agency of recognized integrity.

**Study Funds**—Closely related to the problem of selection is that of subsistence funds for these students. In our visits to Institute trainees, we have frequently seen non-scholarship students who were seeking funds to help them complete their programs. Their plight is quite depressing and the effectiveness of study is undermined by worry over means of support. None of these visitors should have come to this country without funds sufficient to cover travel, subsistence, and tuition. It is our experience that, exclusive of travel, the sum of \$2,000 will be needed to cover the costs of a year's study period. It is to be hoped that candidates from other countries will be allowed to undertake study here only under scholarship grants or with some guarantee that private funds will be adequate. This problem should be remedied at the source by direct action of the United States diplomatic missions in refusing student status visas unless it is shown that sufficient funds are available. Until this is done we believe that our public health administrators have the right to refuse sponsorship of a student who cannot supply evidence of funds sufficient to complete a proposed study program.

**Professional Placement**—It is not easy to decide for these students where they can find the program best suited to their particular

needs. Only a few of them will know where they want to study. The majority will need guidance regarding where to go, how long to remain, what type of program to undertake, and where they can secure the experience most needed for their special purpose. It is essential, for instance, that men from tropical countries should receive different training from men who plan to work in temperate climates; it is likewise important that men who plan to work in rural areas should not be placed too long in metropolitan institutions. Moreover, men from countries where public health progress has been slow will need training in basic concepts which would not be appropriate for men from countries where developments are advanced. Without some preliminary direction there is a tendency for these trainees to concentrate in a few centers which might be socially desirable but which are not necessarily suited to the individual needs. Some plan must be evolved for the distribution of these students among the various schools and health departments. This will be discussed further in the section on Coördination of the Program.

These visitors will not fit into any mold of classroom instruction designed by schools of public health. However, most of them will profit from a general pattern of such schools, providing they can receive the individual guidance which the faculty of these schools should be prepared to give. Others will profit more from special programs or assignments to health departments, laboratories, tuberculosis hospitals, sanitation facilities, etc. It is essential that these placements be made before the arrival of the candidate and that the program originally prescribed be followed strictly. Some of these visitors develop a desire to change their programs and decide to "look around." Such changes will not be conducive to good training and may be a source of embarrassment to the sponsors. Much of this trouble could be avoided by complete agreement between sponsor and student at the beginning of the program. If the details of agreement were approved in writing by the applicant, the sponsor would be relieved of responsibility if the visitor were tempted to make subsequent changes in his program.

**Adjustment to Study Program**—The student from abroad does not find it easy to adjust to study programs that are familiar to our own students. He expects to find different customs of study but does not anticipate so much actual work in the laboratories. He plans to work hard but does not expect to find such punctilious schedules nor such high standards of achievement. Teaching methods

in this country are considerably different from those in European and South American schools where there is less "learning by doing" and where punctuality and regular attendance at classes are less the rule.

*Lack of English* is the most serious barrier to academic progress. Although many visitors have studied English before arrival here, very few will have a grasp of the language sufficient to adjust to the varying tempos, qualities, and accents of our teachers. It is not easy for them to learn to think, write, and read technical material in a strange language. Although familiarity with English will vary somewhat with the country from which these men come, it is safe to assume that most of them will need English training before they can benefit from study experience. Less than 20 per cent of the trainees from Latin America are able to speak and comprehend enough English upon arrival to carry them through a normal study program. Fortunately, some of the schools of public health have provided special courses in technical English and individual tutorial services. Several universities conduct English Language Institutes which offer a most unique and successful approach to this problem. It is to be hoped that the methods used in these Institutes will become more widely available. Until such methods are adopted more generally, we shall lose much valuable time and efficiency in the training of students from non-English speaking countries. Certainly sponsoring agencies should hesitate to accept students from abroad without first determining their language capabilities.

*Personal Adjustment*—In addition to professional problems, these students must face certain personal problems that retard normal progress during their visits in the United States. Most of them are married and must look forward to a rather long separation from their families. They miss their natural diets and the usual comforts of home life. Their circle of friends is limited and their social contacts are restricted. In some instances they are frowned upon as "foreigners" and feel isolated because of this discrimination. Most of them have language difficulties that increase this feeling of isolation. There is at times a lack of security in their professional positions at home which causes considerable preoccupation. It is surprising how frequently these personal matters interfere with the efficacy of study programs. Fortunately, their sponsors have usually recognized these problems and have made cordial efforts to provide friendly counsel and to enlarge their social contacts. These efforts should be continued

and broadened if success is to be achieved in training of personnel from other countries.

*Coördination of Program*—The Training Division has served as a coördinating agency for its program. It has known the particular public health needs within a given country. It has usually known where applicants could find the most suitable work in the United States. It has been able to work closely with ministries of health, with the embassies and the Department of State and with the public health administrators in this country. It has been possible by these means to make satisfactory selection of candidates, to effect an equitable distribution of these people among our institutions, and to offer an overall supervision of the program. This plan of central coördination has proved highly desirable and has relieved our institutions of considerable responsibility. There is no doubt that public health authorities should continue to make all final decisions on acceptance of such candidates, but they should not be called upon to decide upon their professional integrity or eligibility for study grants. Nor should they be called upon to handle all the detailed arrangements in such matters as visas, travel, English instruction, contacts with their governments, and overall supervision. They can hardly be expected to plan the distribution of scholarships to assure that no school of public health or health department will be overloaded. These matters could all be handled more effectively by the establishing of an information service which would be familiar with the status of public health in other countries as well as with the training facilities available in the United States. This agency should be able to work closely with the Department of State, with international health organizations, and with our own public health people. Its functions should be advisory but should not be concerned with the professional program of any individual student once it is established. Such a central clearing house to gather and disseminate information could serve all official and voluntary agencies conducting programs for training nationals from other countries.

#### COMMENT

Facilities for the training of public health personnel in many of the countries of the world have been seriously depleted during the war. Resources for such training in the United States have not only been preserved but in many instances have been improved in spite

of the war. Moreover, increasing numbers of visitors from other countries have been using our training facilities in recent years. It is our opinion that the public health profession in the United States should accept its share of the responsibility for the training of per-

sonnel from other countries. We believe that such a course will bring generous rewards, not only in strengthening international relationships in public health, but also in promoting our own technical knowledge through the exchange of common professional interests.

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## Interdepartmental Committee for the Coördination of Medical Training Film Production

The War and Navy Departments, U. S. Public Health Service, and Veterans Administration realizing the proved value of films and film strips in the training of those who are interested in the field of medicine have by coöperative effort established an Interdepartmental Committee for the Coördination of Medical Training Film Production.

It is the purpose of this committee to develop production facilities and programs in an orderly and balanced manner and to eliminate in so far as is possible unnecessary duplication of effort. To accomplish its purpose, the committee at regular meetings discusses and decides upon: essential aspects of films or other training aids in production; films or other training aids urgently needed; and the agency which possesses facilities essential to the production of a new project.

All visual aids planned and produced are being classified under a limited number of headings, each representing a general field of knowledge pertinent to medicine. Certain agencies possess facilities and subject material suitable for each field of knowledge referred to, hence the appro-

priate agency is designated in each instance to produce the aid required. Any agency which contemplates departure from this general plan brings the matter to the attention of the committee and an appropriate solution to the problem is agreed upon by all members.

It is further the desire of all concerned to make available in the future for loan to medical schools, medical groups, individual physicians, and those engaged in activities considered a part of medical service, who are bound by professional ethics, motion pictures and other visual aids in so far as it is possible within the legal limits imposed upon each visual aid produced.

The committee is composed of the following agency representatives:

Medical Department, U. S. Army—Edward M. Gunn, M.D., chairman; Ruth U. Baker, Recorder.

Bureau of Medicine and Surgery, U. S. Navy—Captain L. R. Newhouser (MC) USN. Joseph Herzman, M.D., Captain R. V. Schultz (MC), W. C. Lown, USNR, and N. Walter Evans.

U. S. Public Health Service—Bernard Dryer, Jean Henderson, and Alberta Altman. Veterans Administration—E. H. Cushing, M.D., Joe Beattie, and A. Graham Eddy.

# The World Health Organization: Cornerstone of Peace\*

THOMAS PARRAN, M.D., F.A.P.H.A.

*Surgeon General, U. S. Public Health Service, Washington, D. C.*

• AND

FRANK G. BOUDREAU, M.D.

*Executive Director, Milbank Memorial Fund, New York, N. Y.*

THE most far-reaching step in history to promote health among the world's peoples was the unanimous adoption of the Constitution of the World Health Organization and its signature by representatives of sixty-one governments in New York City on July 22, 1946. This Constitution, a Magna Carta for world health, was the chief product of an unprecedentedly successful conference, the first to be convened by the United Nations and the largest and most representative international health conference in history.

Plans for the new World Health Organization—which is to be the supreme world authority in health matters and to become eventually universal in scope, extending its benefits to all peoples in all lands—are now in the stage of execution. Blue prints have been prepared, discussed, and perfected. In the form of the Constitution adopted in New York, these blue prints are now being sent to the partners in the enterprise—the governments of the different countries, representing the world's peoples—for formal approval according to their various constitutional procedures. Two governments, those of the United Kingdom and

China, have already ratified the Constitution, thereby pledging themselves to work for world health and to support the World Health Organization financially and otherwise. When twenty-four more of the United Nations have taken similar action the new World Health Organization will come into being. In the meantime the plans have been presented to the central organs of the United Nations. They have been reviewed by the Economic and Social Council which was responsible for organizing the conference, and they will be considered by the coming Assembly which has been requested to make funds available for the work of the Organization. Anticipating the Assembly's approval, the United Nations have advanced funds for the interim work of the Organization.

The world has never been in greater need of a World Health Organization whose avowed objective is the attainment by all peoples of the highest possible level of health, defined as a state of complete mental, physical, and social well-being and not merely the absence of disease or infirmity. For the world is slowly convalescing from severe and long continued attacks of mental, physical, and social diseases which will leave their marks upon generations yet to come. If recovery is to take place

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\* To be presented before the American Public Health Association at the Seventy-fourth Annual Meeting in Cleveland, Ohio, November 12, 1946.



at all, the world's peoples must be given the food and medical treatment adapted to their desperate condition. It will be the duty and responsibility of the World Health Organization, working closely with other agencies of the United Nations, to help the world's peoples back to health and sanity.

The unanimous adoption of a Constitution for the World Health Organization was not the only achievement of the New York Conference. It brought together for the first time after the war, representatives of virtually all nations, including certain ex-enemy nations. It is worth while recalling that after the first World War, a conference on health was the first to bring together representatives of nations which a few months before had been at each others' throats. The delegates and advisers of the sixty-four nations which attended the New York conference got along so well together and agreed so generally on essentials that the conference received comparatively little attention from the press. Like a happily married couple, the conference did not make news.

The conference took the steps necessary to insure that existing international health services would continue pending the ratification of the Constitution and the actual setting up of the new Organization. It provided for the absorption or gradual merging of all existing international health agencies with the World Health Organization thereby insuring the creation of a single world health authority, an achievement for which health experts have struggled for more than a quarter of a century.

In a field where endless difficulties might have been expected, the conference moved boldly ahead. The World Health Organization will not come into being until twenty-six of the United Nations have ratified the Constitution. In the meantime, world health prob-

lems are acute and pressing, and the machinery for international health work has, to some extent, broken down. So the conference decided to set up an Interim Commission to carry on essential international health activities and to prepare the way for the new World Health Organization. That Commission consists of representatives of eighteen governments. Dr. Fedor G. Krotkov, the distinguished delegate of the U.S.S.R., was chosen as its first chairman. When he found himself unable to attend further meetings because of his pressing duties at home, the Commission selected Dr. A. Stampar of Zagreb to succeed him. Dr. Stampar, who is acting chairman of the Economic and Social Council of the United Nations, is known to health officers throughout the world for his pioneering health work in Yugoslavia between the two world wars. The Commission selected Dr. G. Brock Chisholm of Canada as its Executive Secretary, and Dr. Chisholm has appointed Dr. Yves Biraud of the League of Nations Health Section to assist him. Temporary headquarters of the Commission are located in the building of the New York Academy of Medicine, and preparations are under way for a further meeting of the Commission in Paris or Geneva during the month of November. The action of the conference in setting up an Interim Commission, and the promptness of the Interim Commission in getting down to its work proved that the delegates to the conference appreciated the need for quick action to launch the Organization which is expected to bring health to the world's ailing peoples.

A less tangible achievement of the conference was nonetheless important. Individuals experienced in international work will tell you that such and such a conference was a great success while another was a sore disappointment. The basis for these opinions may not

be found in the records, for it is a question of atmosphere. The United Nations Conference on Food and Agriculture at Hot Springs in 1943 is regarded as a model from this point of view. We are convinced that in years to come, the International Health Conference held in New York City this last summer will be looked upon as the starting point for a world health campaign which will bring up the health of the world's peoples to new heights. For the delegates and advisers averaged high in personality, knowledge, and good will. As the conference proceeded they grew to like and respect one another and to work well together. Frankness and sincerity characterized the discussions; bickering over minor points was uncommon. In this atmosphere enthusiasm for the work ran high and the delegates vied with one another to make the greatest contribution to the success of the conference. Hence, the conference generated sufficient enthusiasm and good will to insure a successful launching for the new World Health Organization. Now that the participants have gone home, it is to be hoped that they will become centers of enthusiasm and good will for world health throughout the whole world.

Facts concerning the World Health Organization have been widely published. An excellent editorial on the subject appeared in the September issue of the *American Journal of Public Health*, and the Constitution of the World Health Organization is being printed in full in the November issue of the same *Journal*. This will give every health officer an opportunity to familiarize himself with the origin, structure, and functions of the World Health Organization. Our purpose tonight is not to repeat these facts but to inquire into the significance of international health work in relation to the greatest problem which faces mankind, the maintenance

of world peace. What part can the World Health Organization play in preventing war and in helping to organize peaceful relations between the nations? The Constitution, in its preamble, speaks out boldly on this subject:

The health of all peoples is fundamental to the attainment of peace and security.

The achievement of any state in the promotion and protection of health is of value to all.

Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.

Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

We suggest that the American Public Health Association and its constituent societies should invite the Executive Secretary of the Interim Commission, Dr. G. Brock Chisholm, to speak on a subject which is close to his heart and of which he is master—how our children can acquire the ability to live harmoniously in the changing total environment of the present world. No subject could be of greater significance at this period in the world's history. For the international position is tense; the world's equilibrium is threatened; a new world war might well be the last act of a desperate society struggling blindly for survival and in that struggle dying of self-inflicted wounds. The hope is that our children may be brought up as citizens of the world in which they must live or die; tolerant of their neighbors, whether in the same town or halfway around the world, and working together with all men in all lands, of every race, color, and creed, for the benefit of all mankind.

"The health of all peoples is fundamental to the attainment of peace and security."

Superficial observers will say that wars have not always been started by the nations with the worst health

records, that the most recent and devastating wars are the responsibility of highly developed peoples with a high standard of living and a good health record. But, according to the Constitution, health is not merely the absence of disease or deformity, it is a state of complete physical, mental, and social well-being. Moreover, a glance at the map will show that the trouble spots of the world—the areas which are now disturbing international relations—are those in which poverty, malnutrition, and disease are rife. Rioting has broken out in India which has experienced a terrible famine in recent years, which is still on hunger rations, and where malnutrition is rife; nor is India a stranger to devastating epidemics of plague and cholera. Fighting has broken out on the frontiers of Greece where for ages famine, poverty, and disease have been the close companions of the people. China is torn by civil war, and again famine, disease, and poverty have reduced to misery the life of the inhabitants in the areas where fighting rages. And so it goes over the whole world, inside of the different countries, no matter how highly developed, as well as on their frontiers. We in this country are singularly fortunate in the freedom and security we enjoy, but we cannot forget that many of our difficulties and social disturbances originate in our counties, cities, and states where the expectancy of life is the lowest, where infant mortality rates are the highest, and where general health records are the worst. There is no escaping these facts. What a boon it would be to our people if the low sickness and death rates enjoyed by the counties, cities, and states with the best health records could be extended to all!

"Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger."

Here is another way of saying the same thing that we have just said, but from another point of view. Everyone knows that the only way to protect our country from an invasion by pestilential diseases is to deal with these diseases at their sources—in the countries and areas where they originate. Even more than this is needed; we must destroy the insect vectors in their breeding grounds which carry those diseases. For as Raymond B. Fosdick remarked two years ago, an airplane will carry a mosquito from Africa as easily as it will carry a passenger, and we cannot entrust the safety of our country and our people to the hit or miss of a flit gun. Nor can we be sure that no rats will land on our shores from ships which may have become infected at plague infected ports. But we cannot exterminate plague and yellow fever and typhus fever in their homes by campaigns launched against these diseases alone. For this purpose all round competent health services are needed, and a well trained and alert medical profession. So there must be good medical and public health schools, suitable laboratories and hospitals, modern nursing and proper health centers.

The health services cannot function unless there are proper facilities for communication and transport. You cannot fight disease which may be spread by automobiles and airplanes by sending reports of cases by messenger; you must use the telegraph or the radio. And so it goes. Unequal development in health matters cannot be improved by measures aimed at improving health and nothing else; a whole series of economic and social measures are required, and in nothing less than economic improvement or rehabilitation.

Hardly the main thing, but the most important thing, is the improvement of the world's health. The greatest danger to the world is the violence for these

world ablaze. We must now learn that we also live in one world as regards social and economic affairs, and that we cannot attack one social or economic problems with success; there must be an integrated approach to every international problem. That does not mean that we cannot begin with an attack on health problems. There is much to be said for this policy, and the success of the New York health conference shows that there is already a large measure of agreement among nations in this field. While beginning with health however, it is necessary to go on until a campaign has been launched against unequal development of the different countries in many economic and social fields.

Two years ago at the 73rd Annual Meeting of our Association, Raymond B. Fosdick, in a notable address on "Public Health as an International Problem," predicted that the residual problems which the war would leave in its wake would far transcend in difficulty and ominousness the problems which we had faced during the war. To deal with those problems he foresaw the pressing need for "rallying points of unity, centers around which men of differing cultures and faiths can combine, defined fields of needs or goals of effort in which by pooling its brains and resources the human race can add to its own well-being." The activities of a new international health organization could "dig new channels of thought and establish fresh methods of approach" to those problems. Such activities "could lead the way in showing the countries of the world, now separated by hatreds and passion, what it means to play ball together."

How difficult and ominous are the problems which the war has left in its wake: the control of atomic energy, the settlement of displaced persons, the rehabilitation of devastated regions, the threat of inflation in some countries and the results of it in others, the lack of

food, the spread of famine and malnutrition and, above all, the moral and intellectual bankruptcy of mankind and its leaders! Faced with these difficulties and dangers mankind is seeking rallying points of unity, centers around which men of differing cultures and faiths can combine. The political institutions of the League of Nations in which men placed their hopes after the first World War failed when put to the crucial test. The international social and economic institutions which grew up almost unperceived in the League proved unexpectedly resistant. Today we are witnessing the establishment of new political institutions and new social and economic agencies, designed to solve the greater and more pressing problems which have developed during the war or which have been accentuated by war conditions. Foremost among the latter is the World Health Organization, destined, we hope and pray, to be a rallying point of unity, and to teach men of different nations what it means to play ball together. Health for the world's peoples is inscribed on its banner and under that banner men of all races, creeds, and colors can unite.

In the world before the war, coöperation in health matters led the way in international coöperation. In this field new ventures were attempted, new methods evolved, new technics established which proved useful in wider fields. That the present World Health Organization may build and expand on these foundations must be the wish and the prayer of everyone present tonight.

But to organize peace and to prevent war, appropriate machinery must be created to deal with all of the world's social, economic, and political problems, for, as we have been reminded on so many occasions, peace is one and indivisible. So we must work for every one of the new political, social and economic institutions: the Food and Agriculture Organization of the United

Nations, which has already, in less than a year made considerable headway; the International Labor Organization; the United Nations Educational Scientific and Cultural Organization; the International Bank for Reconstruction and Development; the International Refugee Organization; and the World Trade Organization (these last two yet to be established); and the central organization of the United Nations with its General Assembly, Security Council, and Economic and Social Council, and many others.

By force of events we have become citizens of the world. These same forces have broken down the barriers which have separated the peoples of the world for centuries and have replaced them with bands of steel linking them together ever more closely. As citizens of one world we must work together for the benefit of all or be at odds with each other for the benefit of none—for the extermination of mankind. As world citizens we must support and sustain the institutions which men of good will from all countries are creating to bring order out of chaos in our international relations. To be a good citizen of the world or of any part of the world requires knowledge of the problems which threaten us all, and support of the activities which are being undertaken to deal with these problems. Given public understanding of the problems and aims of the agencies which are being created to solve them, there is no need to fear for their success. Specialized groups, like the members of the American Public Health Association, have special duties and responsibilities. Programs of health education must include education for world as well as national and individual

health. Members of the Association should be foci of enlightenment, scattered throughout the land, teaching the gospel of health to all who will hear, so that government and people may understand and support the aims and work of the World Health Organization.

We have much to give to the world in the field of health but we have also much to learn from other countries. In the field of medicine and public health no nation has a monopoly. Three of the greatest advances in the prevention and treatment of disease during recent years have come to us from abroad: the sulpha drugs from Germany, penicillin from England, and DDT from Switzerland. By pooling world knowledge and experience, and taking advantage of every advance in any country the whole world will benefit.

More than a hundred years ago the effort began which culminated in the signature by representatives of 61 countries of the Constitution of the World Health Organization on July 22, 1946. The unanimous adoption of that Constitution, far-reaching in scope and universal in appeal, was the next to final step in the establishment of a universal World Health Organization. When the final step will be taken, and how successful the Organization will be in healing the wounds of war and spreading health among the world's peoples, depend upon the understanding, interest, and support of men and women like those in this audience in the different countries of the world. With such support the World Health Organization may well become a rallying point of unity for the world's peoples, a center around which men of differing cultures and faiths can combine, a cornerstone in the structure of peace.

# The Sanitary Engineer Looks Forward\*

ABEL WOLMAN, DR.ENG., F.A.P.H.A.

*Chairman of the Sanitary Engineering Committee of the Pan American Sanitary Bureau; The Johns Hopkins University, Baltimore, Md.*

AT this first Inter-American meeting of sanitary engineers and public works officers, I have been assigned the vulnerable task of attempting to present a prospect in the field of sanitation over the next several decades. Even under the most favorable circumstances a prophet is literally "without honor in his country." Fully realizing the risks of prophecy it still seems helpful to let one's imagination range over the field with the indulgence of the representatives at these sessions.

Many years ago the late President A. Lawrence Lowell of Harvard summarized the years following wars in these terms:

It is hardly an exaggeration to summarize the history of four hundred years by saying that the leading idea of a conquering nation in relation to the conquered was in 1600, to change their religion; in 1700 to change their laws; in 1800 to change their trade; and in 1900 to change their drainage. May we not say that on the prow of the conquering ship in these four hundred years, first stood the priest, then the lawyer, then the merchant, and finally the physician.†

This all too brief summary, with the necessary modifications and expansions appropriate to the complex world in which we now live, is as generally applicable today as it was many decades ago. The damages created by war were

paralleled by the realities of the peacetime periods before World War II. A review of the countries of the world prior to 1933 would have disclosed the need for immediate service in the field of sanitation, a need only dramatized by the exigencies of war.

Destruction of water supplies in the Ruhr, the damage to sewerage systems in Coventry, the destruction of the water supplies of Manila, either by direct bombing or by deliberate sabotage, reemphasized the importance which these orthodox necessities of normal living played even in most favored countries. Cholera, typhoid, dysentery, malaria, and typhus, only a few of the scourges of the world, are not only war-borne. They are the normal accompaniments of the peacetime pursuits of man. The insanitary conditions which caused them prevailed before the war and confront us throughout the world after the war. History merely demarks the cyclical rises and falls in their intensities. Wars, depressions, and famines awaken the world to this continuing of the struggle of man for protection against his own environment.

It is not an exaggeration to say that Great Britain, France, and the United States of North America would all derive advantages from the effective control of yellow fever or malaria. While China or Iran would no doubt benefit from the sanitary engineering experience of the Western World, this does not mean that the Western World itself is living in a Utopia freed of the neces-

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\* Presented before the Inter-American Sanitary Engineers, Rio de Janeiro, June 10, 1946.

† cf. Winslow, C.-E. A., *International Organization for Health, Commission to Study the Organization of Peace*, 1944. New York, N. Y.

sities of controlling the environmental diseases.

This much only can be said, that in those countries blessed with rich resources, with organized public service, and with a rapid rate of public works installation, progress in the control of the environmental diseases has been more rapid. How to transmit these blessings to countries or parts of countries historically less favored thus becomes perhaps one of the most important future assignments of the statesmen in sanitation. For India, with its 400,000,000 people; for China, with its almost 500,000,000; for the 250,000,000 Europeans, the 100,000,000 Arabs, the 185,000,000 Russians, and the 200,000,000 Latin Americans, the problems of sanitation are essentially the same as those which confronted us in the past and will press us for the future in North America.

The differences in problem throughout the world or within the Western Hemisphere alone are those of timing, of finance, of social organization and public persuasion. Challenges such as these to the sanitary engineer are not limited by political boundaries, by language, by racial difference, or by economic philosophy. They must be met on each ground within the framework of geographical and political setting. It is still true, as Professor George C. Whipple pointed out many years ago, that "the world is bound in bacterial bonds." To break those bonds requires energy and perspective on a world-wide base and not a nationalistic adherence to geographical or political limits of activity.

#### WHAT AILS THE WORLD

To discover future possibilities and necessities for sanitary engineering function one need only turn to a brief review of the diseases that disable and kill in the world. What are they, where do they occur, and when may

they be conquered with the resources now available? Many years ago I pointed out that "the ghosts of environmental disease have been laid in literature but not in fact." Once more war has reminded us of the validity of this observation. The same thought was exemplified in the country of one of your associates, Dr. Afranio Peixoto, when he stated in 1941 that "an enfeebled pestilence is not a danger past."

The key to the future activities of the sanitary engineer, therefore, must rest upon the fact, as Colonel Dieuaide has so well stated, that "preventive medicine has not yet abolished any disease. The price of health security is eternal vigilance."

My emphasis on these considerations stems from the fact that the superficially minded, the hasty diagnostician, and the "nouveau" expert, all jumping from one new slogan to the next, tend to forget that the victories of the past presuppose continued protections for the future. Control of the environmental disease cannot rest upon such fits and starts of organization or concept.

In a recent discussion of China's health problems, Dr. Szeming Sze points out that on any one day among the 400,000,000 people of China, 16,000,000 persons are sick. With a death rate of 25 per 1,000, over 10,000,000 people die every year. He estimates that of the 10,000,000 deaths 4,000,000 are unnecessary deaths each year, and probably three-quarters of these unnecessary deaths are attributable to the excessive incidence of gastrointestinal diseases, the infectious causes of infant mortality and pulmonary tuberculosis. No inconsiderable portion of this morbidity and mortality is due to the absence of any of the elementary provisions for the protection of water supply, for the elimination of sanitary wastes or for the control of insect-borne disease.

In India the situation is more than paralleled. The toll taken by the gastrointestinal diseases, by the diarrheas of children, by the malarias of all ages is staggering in its magnitude and devastating in its restrictions in the opportunity of people to develop their resources to the utmost. So widespread and so dramatic are these tolls in India that in the 1945 issue of the British *Who's Who*, a distinguished leader in India lists under the heading of his "Recreation": "propaganda for rousing the sanitary conscience of the people in the matters of public health . . . research in intestinal flagellate protozoa and fermentation bacteria." Even allowing for the strong diversions which this intellectual may permit himself, it is a tribute to his recognition of the plight of his people that these efforts in the field of sanitation loom large in competition with the more familiar tennis, walking or swimming.

Conditions, of course, are paralleled in almost every country of the globe where the diseases of filth still reign supreme as the major cause of death and of misery while still alive.

Many observers have already pointed out that these problems of the environment cannot be disposed of or masked by referring to them as "tropical diseases." They are neither tropical in origin nor restricted by latitude. Historic accident may emphasize their tropical location, but the conditions which engender them cannot be easily or accurately relegated to the tropics. Colonel Dieuaide properly points out that there are in fact few truly tropical diseases. The diseases so classified are the stock in trade of India and China, for example.

Cholera and plague are tropical only because they have been successfully driven into areas not yet capable of wiping them out. By the Grace of God, money, and sanitary organization, they are rare in Western Europe or the

Americas. No one, of course, discounts the relationship of geography to disease, but in the field in which we are today active the future holds challenges to the sanitary engineer that are not circumscribed by the tropics or by the remote areas of the world.

When we compare, for example, the principal causes of death in the United States of North America and in Latin America, we find that the major difference in the problem is one of time. In 1900, diarrhea-enteritis and typhoid fever were among the 10 leading causes of death in the United States. In 1937, diarrhea-enteritis was still among the 10 leading difficulties. Typhoid fever had been curbed, not abolished, as will be pointed out later on.

In Latin America, however, the six diseases or combinations of diseases which seem to stand out as the principal causes of death are tuberculosis, diarrhea-enteritis, malaria, infant mortality, pneumonia, and heart disease.

Perhaps the major health problem of Latin America as a whole is malaria when we consider its complete incapacitating power. Even though dysentery and the general intestinal parasites do not appear among the six principal causes of death in Latin America, because their killing power is low, they still present one of the major problems in public health because of their profound debilitating effect on individual vitality.

If we were to review these statistical implications of environmental diseases of the world as a whole, we cannot escape the conviction that the diseases subject to the controls by the engineer will be by far the most important health problem confronting the world for many decades. It is not too much to say that the greatest probable source of accomplishment in the reduction of morbidity and mortality in the world would be through environmental sanitation.



## FUTURE FUNCTIONS OF THE ENGINEER

All that has been said above makes it reasonably obvious that the engineer of the future is confronted with both an unlimited task and an engrossing opportunity. The normal functions which he has been called upon to perform in the past are all too familiar to you. His functions for the future in the fields of water supply, sewerage, air control, housing, insect control, rodent control, remain essentially the same. Their geographical spread, their rate of application, their expansion in understanding will all need to be speeded up. Perspective will no doubt require an expansion beyond that ever envisioned before. These opportunities in the post-war period are well summarized, even though briefly, in the opening paragraph of the Progress Report of the Committee of the American Society of Civil Engineers on Advancement of Sanitary Engineering, 1946. The committee's words are as follows:

All surveys of the personnel needs of the post-war world indicate an increased demand and expanding field of service for sanitary engineers. In the realm of public health; in the design, construction, and supervision of sanitary works; in the armed services; in far-flung relief and rehabilitation activities; in educational work; in many types of industry; in the design, manufacture, and sale of sanitary equipment; in the food handling and processing industries; in some fields of municipal government; in the vast and long neglected realm of housing, and in many other activities—there is increasing need for the services of trained and experienced sanitary engineers.

That there is much to be done everywhere cannot be gainsaid. It is appropriate perhaps to point out that these comments are as pertinent to our activities in North America as they are in Latin America or any other country in the world. It is too early to forget that in the latter part of 1939 in the Manteno State Hospital of Illinois 543 cases and 60 deaths occurred from a typhoid fever epidemic. The causes

may still appear to be debatable, but strong evidence implicates the sewage pollution of the water supply of that institution.

During 1943, for example, there were 389 outbreaks of disease in the United States of North America transmitted by water or food. They caused 23,665 cases of reported illness and 56 deaths. The unreported cases probably represent many times those actually listed.

These "ghosts" of the environmental diseases still walk the streets of North America.

## THE PROBLEM OF MONEY

One of the great difficulties in the control of environmental diseases is that any effective procedure requires money. The pernicious cycle of disease to poverty to disease represents perhaps one of the most important challenges to the sanitary engineer. What are the devices by which environmental structures may be designed, constructed, and operated more cheaply than they are now? By what measures is it possible to reduce the unit cost of purifying water, of treating sewage, of controlling insects and rodents?

In some of these fields the war fortunately has produced possibilities of materials and of equipment which are less expensive than those available before the war. Some of these have immediate application and use in the control of environmental diseases. The engineer, however, must develop new techniques of financing which would make it possible for governments throughout the world to apply the known solutions to the devastating problems of disease.

These meetings will offer an opportunity for much discussion on the problems of financing the installation and the operation of many devices for sanitation. It has long been my judgment that too little study has been given to financial procedures. These matters

have been too frequently relegated to administrative officers unfamiliar with their importance or insufficiently ingenious to develop new procedures for paying for sanitary installations. The provision of money is an essential sanitary engineering objective which must be emphasized for speeding up future activity.

What relationship there should be between central and local governments in the provision of money is not only a matter of political philosophy from country to country but also a matter of local availability of funds. In some countries it is no doubt true that most of these activities can be adequately financed through local units of government. In others it is equally obvious that central governments must do much in the next decade to help carry the financial burdens made necessary by sanitation.

I have no pretension to being able to point out where these real responsibilities should be lodged. They are mentioned here primarily to focus attention on their key importance to sanitary engineering progress throughout the world.

#### ADMINISTRATIVE STRUCTURES

Of almost equal importance in the introduction of sanitary reform in any country is the development of the administrative structures necessary to execute and to operate the installations required. Here, too, political philosophy dominates the scene.

There is perhaps no general law, other than that of expediency, which will determine how much local autonomy and responsibility should prevail in contrast with the responsibilities of the central government.

Each country again would probably find the most successful relationships established out of the history of its attributes, its political origins, its racial combinations and its

advance along the road to healthy democratic institutions.

In this field, too, the sanitary engineer has a part to play. He must familiarize himself with the lessons of other countries in administrative management and structure. He cannot, of course, slavishly apply the lessons of other countries to the solution of the problems of his own country. He can, however, suggest and devise administrative structures which would facilitate the purely managerial phases of environmental sanitation. He should be able to share the values to be obtained from central government stimulation with the preservation of local autonomy and responsibility. The countries in Latin America, for example, give demonstrations over the entire spectrum of central-local government equilibrium. Such a permanent group as is here assembled should in the course of time introduce objective analyses of these various forms of governmental administrative structures. Out of such analyses should come various examples of how best to establish the governmental machinery for the most rapid and effective introduction of sanitary structures and measures.

#### EDUCATION AND RESEARCH

To accomplish the objectives all too briefly discussed, the development of sanitary engineering staffs will be required. Such development will place upon the universities of the Americas a task which cannot be lightly treated. Here, too, this group should in the not too distant future evaluate the requirements, the status, and the type of education and training which will be demanded for the most effective practice of sanitary engineering.

Suggestions for curricula for accredited schools of sanitary engineering and public health may very properly be one of the early assignments of such a group as this.

A necessary concomitant of a program of education for professional workers lies in the field of research. Much remains to be discovered in the general field of environmental sanitation. Many investigative tasks are still ahead. Fundamental data on many of our activities are still lacking.

The development of essential features of a research program is an additional assignment to serious minded members of this group.

#### PROFESSIONAL STATUS

All of us are aware that the sanitary engineer not only has a struggle with the physical environment, but has likewise the task of strengthening his capacity and his position in the field of public health activity. This cannot be accomplished by sleight of hand.

His status in the future, whether strong or weak, will rest upon the quality of his equipment and of his performance.

One of the best ways of intellectual group-fertilization is in the strengthening of such a professional group as here assembled. The range of problems which it might with profit discuss and survey covers the status, the professional training, the pay, and the public position of the sanitary engineer. All of these will be issues of the future which remain to be argued, measured, and promulgated.

#### SUMMARY

Problems requiring the energies of sanitary engineers are world-wide in character. They are intellectually stimulating and cover a service to the people of the world transcended by no other activity. A necessarily limited review of these problems and of possible solutions has been presented. A scope of activity has been defined for the sanitary engineer of the future which can be no longer delimited by the purely technological. Political philosophy, financial program, administrative structure, and public education are all essential bases for sanitary engineering action. Technology alone will not bring on the rapid correction of the evils engendered by insanitation.

Although I might not aspire to the heights of imagination exemplified by the following comments of one of our contemporary authors, I cannot escape the essential validity of his argument. His words are a fitting closure to the limited observations here made:

Let no cultivated reader despise these details (lavatories, sinks, sewers, and manholes). There is no truer sign of civilization and culture than good sanitation. It goes with refined senses and orderly habits. A good drain implies as much as a beautiful statue. And let it be remembered that the world did not reach the Minoan standard of cleanliness again until the great sanitary movement of the late nineteenth century.—J. C. STOBART, *The Glory That Was Greece*.

# Insect Tests of Wire Screening Effectiveness

DR. S. S. BLOCK

*Associate Research Engineer, Engineering and Industrial Experiment Station,  
University of Florida, Gainesville, Fla.*

WINDOW screening for protection against flying insects has been manufactured for approximately ninety years with few changes in its form and structure during that time. During the last year a new type of wire window screening was introduced and over 60 million square feet have already been produced. This screening has rectangular rather than the common square mesh openings and is woven with 18 warp (length) wires and 14 filler (width) wires to the inch instead of the usual 16 wires per inch in both warp and filler. The conversion from 16 x 16 to 18 x 14 mesh increased the output considerably since the warp wires were fixed in position and the shuttle had only 14 trips to make per linear inch of screening instead of 16.

The possibility that the new 18 x 14 mesh screening might be used in place of 18 x 18 mesh screening was considered and this study was undertaken to determine quantitatively the comparative effectiveness of the 16 x 16, 18 x 14, and 18 x 18 mesh screening as well as other mesh sizes of screening having both square and rectangular mesh openings.

## HISTORICAL

There are few references in the literature giving what might be termed a quantitative comparison of the effectiveness of different mesh sizes of screening. Rosenau,<sup>1</sup> referring to pre-

vious experimental work at Veracruz, noted that the *Aedes* mosquito could pass through 15 x 15 mesh, but not 18 x 18 mesh screening. Boyd<sup>2</sup> found that coarse mesh screening, such as 12 x 12 or 14 x 14 mesh, afforded a certain amount of protection against anopheline mosquitoes, as estimated from malaria incidence. Earle,<sup>3</sup> in Puerto Rico, observed that standard 16 x 16 mesh screening would afford protection against all insects but the small culicoides. Herms and Gray<sup>4</sup> reported that standard 16 x 16 mesh screening does not exclude many *Aedes* and some *Anopheles* species. For army requirements, the War Department<sup>5</sup> considered the openings of the regular 16 x 16 mesh too large. The standard 18 x 18 mesh wire screen, however, was said to exclude both malaria-carrying and the smaller insect pests.

## MATERIALS AND METHODS

The sizes of wire screening used in these tests were 18 x 18, 16 x 16 and 14 x 14 mesh for those having square mesh openings and 18 x 16, 18 x 14, and 18 x 12 for those having rectangular mesh openings. All screening was made with standard diameter wire of 0.011 inches.

To obtain a quantitative comparison of the effectiveness of different meshes of screening, insects were raised in the laboratory and were tested for their ability to penetrate the screening

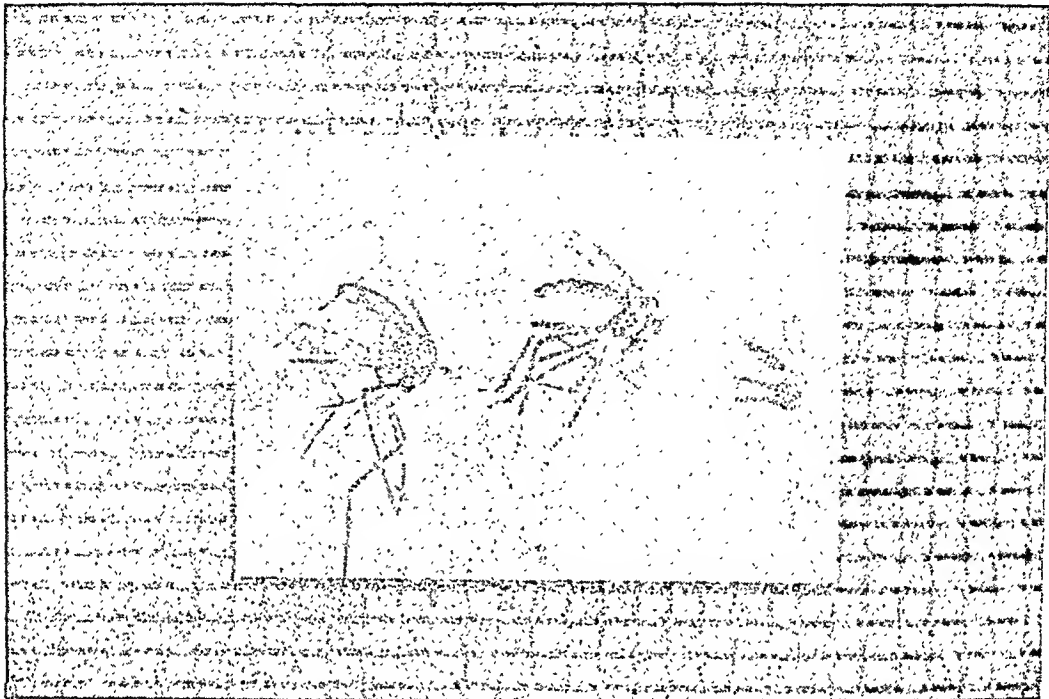


FIGURE 1—Relative Sizes of Test Mosquitoes—Left to Right, *Anopheles quadrimaculatus*, *Aedes aegypti*, and Undersized *Aedes aegypti* (16 x 16 Mesh Screen)

under laboratory conditions. The insects used for the tests included the common housefly, *Musca domestica*, the malaria-carrying mosquito, *Anopheles quadrimaculatus*, the common southern house mosquito, *Culex quinquefasciatus*, and the yellow fever transmitting mosquito, *Aedes aegypti*. Undersized *Aedes aegypti*, produced by overcrowding and underfeeding in the larval stage, were also used. The sizes of the mosquitoes are given in Table 1. Figure 1 illustrates these comparative sizes as against the size of the mesh openings of a sample of 16 x 16 mesh screening. Outdoor tests demonstrated the effectiveness of the screening against

small light-attracted insects such as leaf hoppers, gnats, and tiny moths.

The adult laboratory-bred insects were introduced into screened cages 12" x 4" x 2". The cages were then closed and placed inside gauze-covered glass museum jars. After 48 hours in the laboratory at 85° F. and ordinary room-lighting conditions the insects were gassed with ethylene dichloride and the numbers both inside and outside the screened cages were counted.

Preliminary laboratory tests showed that the following experimental conditions had no effect on the ability of the insects to penetrate the screening: lighting conditions (except for direct

TABLE 1  
Size of Mosquitoes Used in Screening Tests

Common Name	Scientific Name	Length of Body (inches)	Width of Body (inches)
Malaria Mosquito	<i>Anopheles quadrimaculatus</i>	0.20	0.04
Southern House Mosquito	<i>Culex quinquefasciatus</i>	0.18	0.04
Yellow Fever Mosquito	<i>Aedes aegypti</i>	0.16	0.027
Yellow Fever Mosquito— (undersized)	<i>Aedes aegypti</i>	0.12	0.020

sunlight which was lethal to the mosquitoes); age of insects; and the number of insects in the test cage.

#### PENETRATION OF SCREENING

In tests employing all of the above listed mesh sizes of screening no individuals of *Musca domestica*, *Anopheles quadrimaculatus*, or *Culex quinquefasciatus* penetrated any of the screening tested. Of the laboratory raised insects only the normal sized and, to a greater extent the undersized, *Aedes aegypti* were able to pass through the mesh openings and escape from the screened cages.

The percentages of mosquitoes escaped from the screened cages is given in Table 2. Column 1 of Table 2 gives the nominal mesh size of each screening sample as specified, while column 2 gives the actual mesh size as determined experimentally. In column 3 is given a value which is common to all mesh sizes of screening, namely, the diagonal of the square or rectangular mesh openings, which is the longest dimension of the opening.

Upon examination of the data in Table 2 it is observed that the percentages of mosquitoes escaped are related to the lengths of the diagonals

of the mesh openings. This might be anticipated from the fact that a mosquito is an animate object and therefore would attempt to find the line of greatest clearance for its wings in crawling through the opening. Figure 2 presents the percentages escaped plotted as a function of the lengths of the diagonals. The curve for the normal size *Aedes aegypti* may be said to have three divisions: the cut-off range where mosquitoes were entirely excluded; the central portion where screening was directly proportional to the length of the diagonal; and the range where the screening became ineffective as a barrier to insect penetration. The curve for the undersized *Aedes aegypti* has the same general shape as that for the normal size *Aedes aegypti* curve, but is displaced from it.

According to the data in Table 2 there was no difference in the ability of the normal size *Aedes aegypti* to penetrate 18 x 14 or 16 x 16 mesh screening. Although there was an apparent difference between the 18 x 14 and 16 x 16 in the tests of the undersized *Aedes aegypti*, this difference was directly in line with the actual mesh size of the screening rather than the nominal mesh size, as is indicated by the curve in

TABLE 2

#### Laboratory Screening Effectiveness Tests Employing *Aedes aegypti* Mosquitoes

##### *Aedes aegypti* — Normal Sized

Mesh Warp x Filler (Wires/Inch)		Length of Diagonal of Mesh Opening (inches)	No. of Test Runs	Number of Mosquitoes		Per cent Escaped
Nominal	Actual			Tested	Escaped	
18 x 18	18 x 18.7	0.0616	7	249	0	0 ± 0
18 x 18	18 x 18.4	0.0622	4	141	5	3 ± 3
18 x 18	18 x 17.6	0.0639	4	108	5	5 ± 2
18 x 16	18 x 15.5	0.0697	4	95	12	13 ± 3
16 x 16	16 x 16.2	0.0723	17	621	88	14 ± 3
18 x 14	18 x 14.3	0.0739	14	466	66	14 ± 3
18 x 12	18 x 12.5	0.0822	8	280	116	41 ± 6
14 x 14	14 x 14.2	0.0847	10	331	181	55 ± 6

##### *Aedes aegypti* — Undersized

18 x 18	18 x 18.7	0.0616	6	193	11	6 ± 2
18 x 14	18 x 14.6	0.0728	6	236	66	28 ± 6
18 x 14	18 x 14.4	0.0736	4	136	44	32 ± 8
16 x 16	16 x 15.0	0.0759	7	223	112	50 ± 6

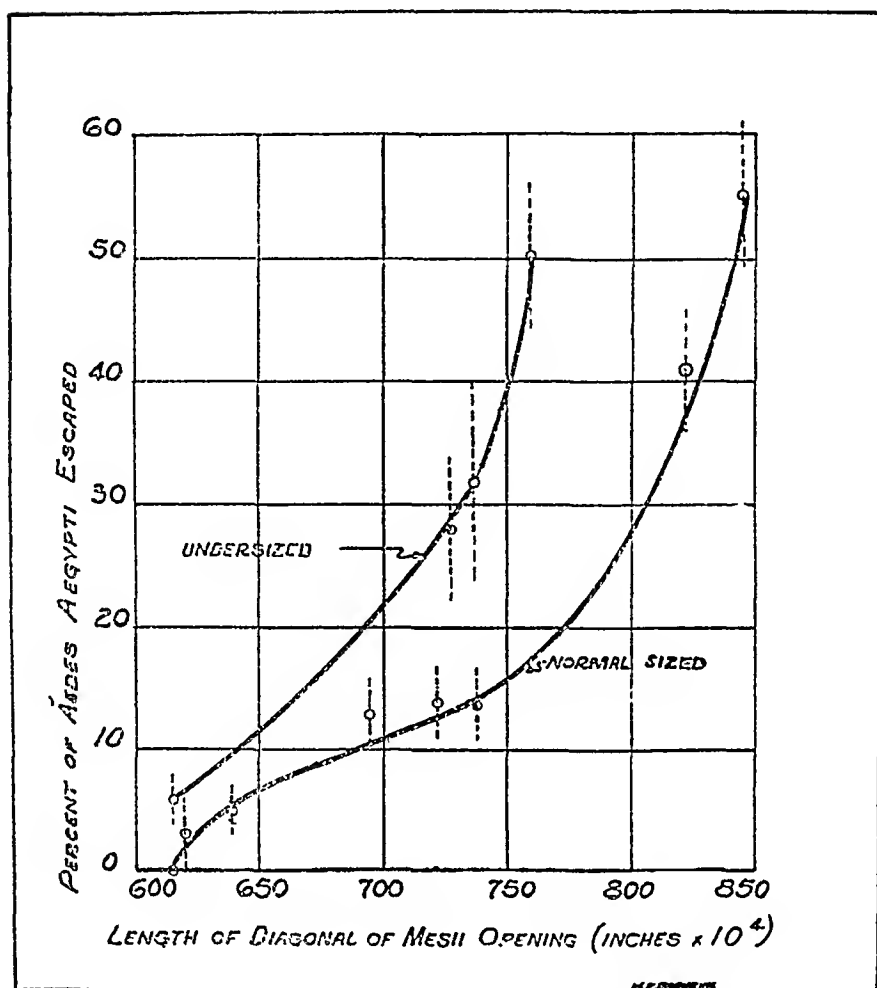


FIGURE 2—Effect of Length of Diagonal of Screening Mesh Openings on Mosquito Passage. Laboratory Tests

Figure 2. If the length of the diagonal is truly the criterion of screening effectiveness, then the 18 x 14 mesh is theoretically slightly less effective than the 16 x 16 mesh screening because the diagonal of screening exactly 16 x 16 mesh is 0.0728 inches while that for 18 x 14 mesh is 0.0751 inches. It is highly improbable, however, that this small difference could be of any practical significance.

Any discussion of screening having exactly the designated mesh size is purely theoretical. In the production of wire screening manufacturers are permitted a tolerance of  $\pm 0.5$  mesh in the filler direction and  $\pm 0.25$  mesh in

the warp direction, regardless of the mesh size. The influence of these tolerance limits as they could affect screening effectiveness is portrayed graphically in Figure 3 by superimposing the limits for 18 x 18, 16 x 16, and 18 x 14 mesh screening on the curve (Figure 2) for the normal size *Aedes aegypti*. It is noted from Figure 3 that while the limits for 18 x 14 and 16 x 16 mesh screening overlap, the 18 x 14 lower limit extends further into the range of greater insect passage. If the manufacture of 18 x 14 mesh screening is to continue to replace 16 x 16 mesh it would seem advisable to narrow the lower limit of the filler wire

tolerance for the 18 x 14 mesh screening. Greater care should also be urged upon securing uniformity in the spacing of the filler wires of 18 x 14 mesh screening, for any irregularity in the spacing of the 14 filler wires to the inch would result in greater avenues for insect entry than the same irregularity with screening having 16 wires to the inch.

ORIENTATION OF SCREENING

Since the screening commonly used has square mesh openings there is no distinction as to whether the screening is mounted with the warp wires vertical or horizontal. However, when screening has rectanugular openings the question arises as to which direction of mounting would give greater effectiveness. Table 3 compares the 18 x 14 and 18 x 12 screening in both the vertical and horizontal positions. The warp direction is the major axis of the rectangle. The difference between the percentage escape for the vertical and horizontal positions of the 18 x 14 mesh was not significant, indicating no advantage in either orientation. With the 18 x 12 mesh, however, the difference was significantly in favor of the vertical position. With the screening in the vertical position the diagonal of the rectanugular opening is directed at an angle from 45° to 90° depending on the proportional lengths of the sides. When the screening is horizontal the

diagonal may vary from 0° to 45°. Since the mosquitoes are generally on the screening with their bodies in a vertical direction, it would seem easier for them to adjust their wing clearance by having to turn only 0°-45° rather than 45°-90°. The greater the difference between lengths of the sides, the closer the diagonal approaches 0° and 90° and the greater the difference in insect passage that would be expected between the vertical and horizontal orientations. Eventually, however, the rectangularity produced by the increase in the number of warp wires at the expense of the filler wires (as for example 20 x 10, 22 x 8, etc.) would result in a mesh opening having less width than the insect's body, thus preventing passage regardless of the orientation. This condition would be of no practical importance since the lack of sufficient filler wires would make such screening highly vulnerable to distortion under conditions of wear and tear.

SEX OF THE MOSQUITOES

Inasmuch as it is only the female mosquito that bites and is a vector of disease, it was of special interest to determine whether there was any difference in the ability of the sexes to get through the mesh openings. In a sampling of 1,443 mosquitoes, representing tests using all of the sizes of the screening being studied, the males

TABLE 3

Comparison of Screening Effectiveness with the Major Axis (Warp) of the Rectangular Mesh Openings, Vertical and Horizontal

<i>Aedes aegypti</i> Mosquitoes					
Mesh Warp x Filler (Wires/Inch)	Direction of Major Axis	Number of Mosquitoes Tested	Number of Mosquitoes Escaped	Mean Per cent Escaped	Difference
18.0 x 14.3	Vertical	274	37	14 ± 4	1 ± 5
18.0 x 14.3	Horizontal	192	29	15 ± 3	
18.0 x 12.5	Vertical	203	74	37 ± 7	24 ± 11
18.0 x 12.5	Horizontal	131	80	61 ± 9	



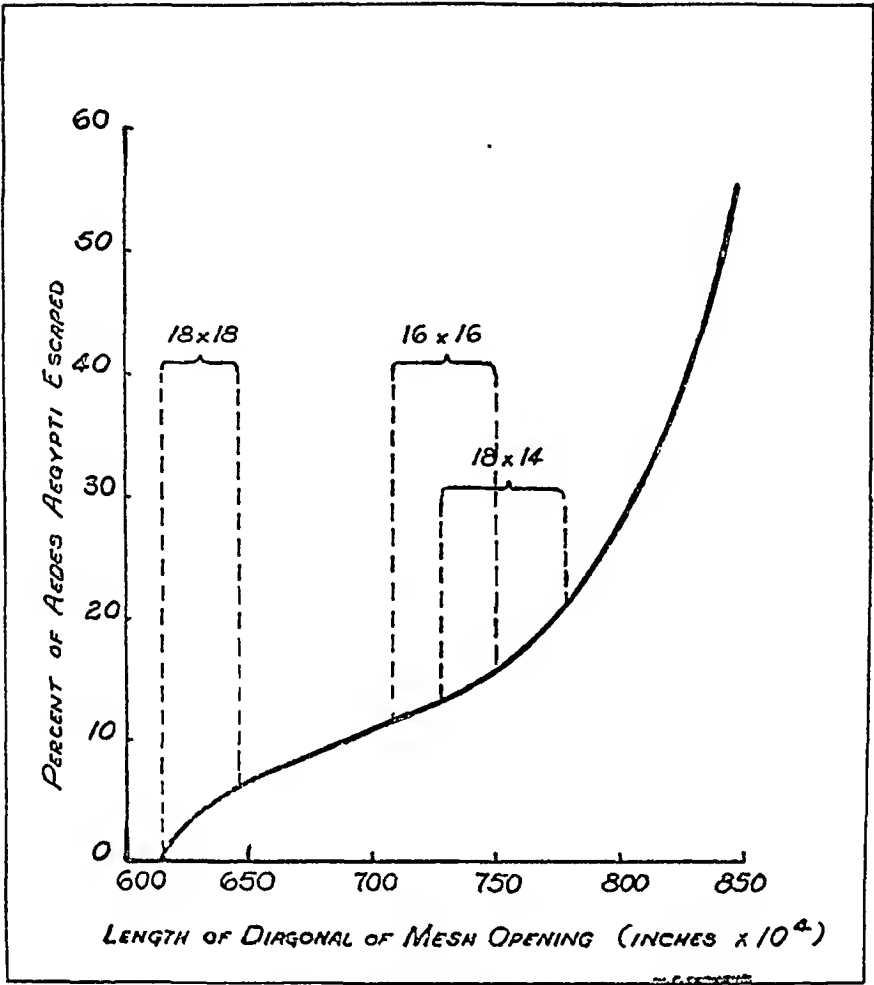


FIGURE 3—Permissible Commercial Limits for 18 x 18, 16 x 16, and 18 x 14 Mesh Screening Superimposed on Passage Curve for Normal Size *Aedes aegypti* Mosquitoes

TABLE 4  
*Influence of Sex of Mosquito on Ability to Pass Through Screening*  
*Aedes aegypti* Mosquitoes

	Females	Males
Population Sampled	498	945
Per cent of Population	34.5	65.5
Number escaped	84	134
Mean Per cent of Each Sex Escaped	14 ± 3	17 ± 4

and females of those escaping and those remaining inside the screened cages were recorded. The results are given in Table 4. Of the total population 34.5 per cent were females and 65.5 per cent were males. Of the total number of females sampled 14 ± 3 per cent escaped from the cages, while

of the total number of males present 17 ± 4 per cent escaped. The difference was not significant, indicating that the results of mosquito penetration for the whole population apply equally well to the female mosquitoes.

SMALL LIGHT-ATTRACTED INSECTS

In tropical and semi-tropical climates the small light-attracted insects such as leaf hoppers, gnats, and tiny moths, and diurnal biting pests such as sand flies are nuisance factors over long periods of the year. It was therefore thought worth while to compare the effectiveness of different mesh sizes of screening against these small insects. Screened

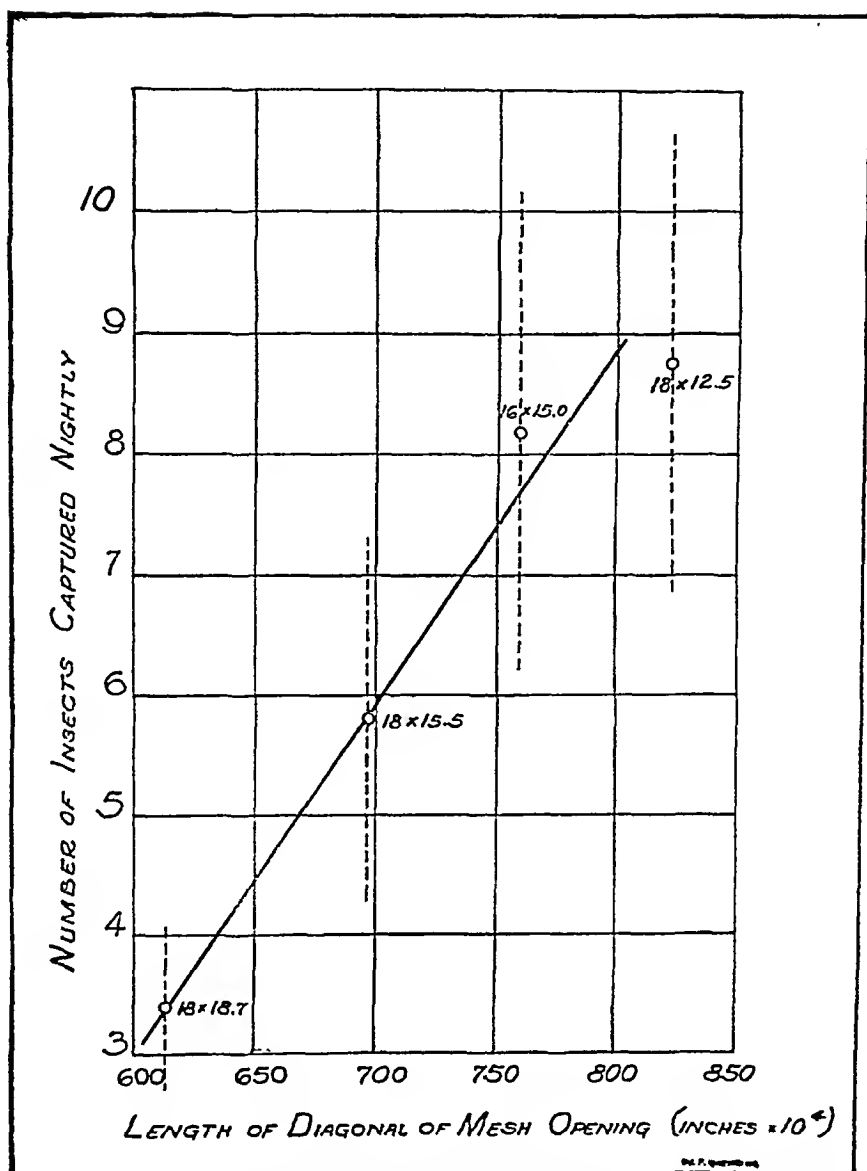


FIGURE 4—Effect of Length of Diagonal of Screening Mesh Openings on Insect Passage. Field Tests

cages  $1\frac{1}{2}' \times 1\frac{1}{2}' \times 1\frac{1}{2}'$  were constructed and a small electric light placed in each. Underneath each light a large sheet of sticky paper was placed to capture the infiltrating insects. The cages were placed out of doors and each day for a period of three weeks the number of small flying insects on each sheet of sticky paper was counted and fresh sheets replaced. The results are given in Figure 4. The average number of insects captured nightly is plotted

against the average length of the diagonals of the individual mesh openings of the screening tested. Like the curves for the laboratory mosquito tests, the insect penetration appears to be a function of the longest dimension of the mesh openings. It is apparent from this curve, and borne out by actual practice, that the 16x16 mesh screening is not satisfactory for protection against these small insect pests. Only 18x18 mesh, or preferably finer meshed

screening, can be counted on to present an appreciable barrier to these tiny flying invaders. It should be pointed out, however, that screening down finer than 18 x 18 mesh is limited by the factors of cost and the reduction in air circulation and visibility through the screening.

#### SUMMARY AND CONCLUSIONS

Laboratory tests were run to determine the comparative effectiveness of different mesh sizes of window screening against flying insects. The screening tested had the nominal mesh sizes 18 x 18, 16 x 16, 14 x 14, 18 x 16, 18 x 14, and 18 x 12, although the actual mesh sizes as determined experimentally differed somewhat from the specified nominal sizes.

The ordinary housefly, *Musca domestica*, the malaria transmitting mosquito, *Anopheles quadrimaculatus*, and the common southern house mosquito, *Culex quinquefasciatus*, were unable to penetrate any of the mesh sizes of screening tested. Both the normal sized and specially bred, undersized yellow fever mosquitoes, *Aedes aegypti*, were able to escape from the screened test cages. For the mesh sizes of screening tested, the percentages of *Aedes aegypti* passing through the mesh openings appeared to be related to the longest dimension, the diagonal, of these openings.

The new 18 x 14 mesh screening and the standard 16 x 16 mesh screening appeared to be equal in effectiveness against *Aedes aegypti* mosquitoes. Orientation of the 18 x 14 mesh screening with the warp direction vertical and horizontal did not appear to influence

the screening effectiveness. With the 18 x 12 mesh, the warp oriented in the vertical position appeared to be more effective than in the horizontal position.

No differences were encountered in the screening of male or female *Aedes aegypti* mosquitoes.

Outdoor screening tests against the small light-attracted insects also showed the screening effectiveness to be related to the diagonal of the individual mesh openings. For localities where small flying insects such as gnats, leaf hoppers, and sand flies are abundant or where the smaller mosquitoes such as *Aedes aegypti* and the salt marsh mosquito, *Aedes taeniorhynchus*, are prevalent, the use of 18 x 18 mesh screening is indicated.

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#### REFERENCES

1. Rosenau, M. J. *Preventive Medicine and Hygiene*. New York: D. Appleton-Century, 1935, p. 211.
2. Boyd, M. F. The Influence of Obstacles Unconsciously Erected Against Anophelines (Housing and Screening) Upon the Incidence of Malaria. *Am. J. Trop. Med.*, 6:157, 1926.
3. Earle, W. C. Some Observations of Anti-mosquito Screening and Screening Materials. *Puerto Rico J. Pub. Health & Trop. Med.*, 8:227, 1932.
4. Herms, W. B., and Gray, H. F. *Mosquito Control*. New York: The Commonwealth Fund, 1944, p. 281.
5. *War Department Technical Manual T M 5-632*, Insect and Rodent Control, 1945, p. 26.

# An Analysis of the Effect of Fat in the Diet on Recovery in Infectious Hepatitis\*

CHARLES L. HOAGLAND, M.D., DANIEL H. LABBY, M.D.,  
LT. HENRY G. KUNKEL (MC) USNR, AND LT. COMDR.  
ROBERT E. SHANK (MC) USNR

*U.S.N. Research Unit at the Rockefeller Hospital and the Hospital of The Rockefeller Institute for Medical Research, New York, N. Y.*

INCREASING attention has been given in recent years to the dietary treatment of diseases of the liver. Information supplied from the growing fields of nutrition and metabolism has resulted in the abandonment of nearly all the older methods employed in the therapy of hepatic insufficiency, and in the adoption of numerous new measures which in many instances have provided a sharp contrast to those which were formerly in use. Proof of the essentially rational nature of the concepts which form the basis of current therapy in diseases of the liver has been afforded by the achievement of increasing success in a field of medical endeavor which was once outstanding for its spectacular failures.

The medical literature on diseases of the liver abounds with specific guides, frequently diametrically opposed in character, for the selection of an optimum diet for the treatment of hepatic insufficiency in man. Until the turn of the century, diets prescribed for patients with liver disease were generally low in all constituents. Carbohydrate was avoided because it was believed that intestinal fermentation might arise and

contribute further to a state of impaired absorption. Foods high in protein were rejected because it was maintained that the metabolism of nitrogen required additional expenditure of energy on the part of the diseased liver. Fat was eliminated from the diet so far as possible, in the belief that there was insufficient bile for its proper absorption. It was not until 1914 that experiments were performed which showed that diets high in carbohydrate afforded measurable protection against damage to the liver by certain hepatotoxic agents, such as chloroform and carbon tetrachloride.<sup>1</sup> The discovery by Goldschmidt and his coworkers<sup>2</sup> of the value of protein in protecting the liver from damage by hepatotoxic agents encouraged the inclusion of protein-rich foods in the diet. Since that time, diets high in protein and carbohydrates have been almost universally accepted as optimum for repair of the liver, although results secured by Mann<sup>3</sup> in the treatment of experimentally induced liver disease in animals, indicate that the type of protein in the diet may be highly important.

Notwithstanding the appearance of numerous recent publications on the dietary treatment of diseases of the liver, the data given thus far have been too inconclusive to permit the establish-

\* The Bureau of Medicine and Surgery of the U. S. Navy does not necessarily endorse the ideas set forth in this paper.

ment of any one diet as superior to others in the management of hepatic insufficiency. Most of the reported data have dealt with the influence of diet on recovery from acute damage to the liver in animals and on chronic diseases of the liver in man. Few experiments have been described which deal critically with the effect of diet on recovery from acute hepatic insufficiency in human subjects. It was decided, therefore, to explore in considerable detail the effects of various experimental diets of widely different composition on the clinical course of a group of patients with infectious hepatitis, in order to obtain information necessary for the selection of a diet of optimal composition for the treatment of acute liver disease in man.

Opportunity to study a selected group of patients with acute hepatic insufficiency came about through the development of a collaborative program of research with the U. S. Navy, by which large numbers of officers and enlisted men with infectious hepatitis were sent to the Rockefeller Hospital for observation and treatment. A review of the general clinical and metabolic features displayed by 200 patients from this group has been published elsewhere.<sup>4</sup> One aspect of the study concerned attempts to evaluate the influence of diet on the course of recovery from the disease.

Of the various recognized forms of hepatitis, that due to a filterable agent is by far the most prevalent at the present time. Although the onset of hepatitis bears a close analogy to that of acute infections in general, the subsequent course of the disease is more characteristic of a metabolic disorder resulting from serious damage to the liver than of an infectious process. In most cases, sex, age, a previous state of good health and absence of complications in the disease were common factors in the patients selected for study. Hence it was necessary to take into

account only the natural variations in severity in the disease, in order to evaluate the effect of diets of varying composition on the period required for convalescence. An attempt to control these variations was made by strict alternation of patients through the various dietary and control regimens. Moreover, only those patients who were hospitalized early in the course of hepatitis were selected for study in order to minimize the influence of variations in the interval between the development of the initial signs of the disease and the subsequent imposition of a given dietary regimen on the length of time required for recovery.

A wide divergence of opinion has been expressed with respect to the optimum intake of fat in liver insufficiency. Ravdin<sup>5</sup> has long inveighed against the inclusion of more than a minimum of fat in the diet in the treatment of hepatic disease. Patek,<sup>6</sup> on the other hand, has achieved promising results in the treatment of patients with chronic liver insufficiency with diets which were high in protein and which contained as much as 175 grams of fat.

Unless every care is exercised to insure the best possible intake of food in patients with hepatitis through frequent feedings and by careful selection of food, the caloric intake may fall during the first days of the disease to less than one-third of that required for the maintenance of body weight. A diminished caloric intake in the early stages of the disease would appear to be doubly hazardous, since according to current opinion it is during this period when injury to the liver is likely to be greatest.

In our experience, diets low in fat have contributed further to anorexia, largely because of their unappetizing character. Since diets low in fat are also low in calories in relation to their bulk, it was frequently impossible to secure sufficient intake in patients on

this regimen to meet the caloric requirements of the patients without exerting exceptional persuasion and occasionally resorting to parenteral feeding. The dictum against the inclusion of fat in the diet in infectious hepatitis doubtless arose from an earlier notion that the disease was associated with obstruction of the major bile ducts. Subsequent studies of the pathological changes which occur in hepatitis, however, reveal that it is primarily a disease of the hepatic parenchyma<sup>7, 8</sup> and not of the major bile passages, as claimed by Virchow.<sup>9</sup>

Recently the use of diets low in fat has seemed justified from results of studies which show that the production of necrosis of the liver in experimental animals by various deficiency diets is greatly facilitated by the inclusion of large quantities of fat in the diet. It should be remembered, however, that necrosis and fatty infiltration of the liver have been produced consistently only by severely limiting the intake of protein and other lipotropic agents such as choline and methionine. It seemed quite unsound, therefore, to anticipate liver injury from diets high in fat and which were also rich in protein and other lipotropic agents.

It appeared that the inclusion of a liberal amount of fat in the diet of patients with hepatitis would assist materially in the management of hepatic insufficiency by facilitating the maintenance of an adequate caloric intake and permitting a wide selection of protein and other types of food which appeal to the appetite.

In an attempt to determine whether this could be done without harmful consequences, a group of 37 patients\* with acute infectious hepatitis were studied on a diet relatively high in fat and protein and the results compared with

a group of 33 alternate cases maintained on a diet low in fat and high in protein. The fats used in the experimental diets were derived chiefly from milk, cream, butter and eggs. Carbohydrate was permitted in quantities necessary to meet the appetite requirements of the patient. No restriction was imposed with respect to the total caloric intake. In each instance, the patient was encouraged to consume the maximum amount of food which was compatible with his appetite and comfort. In the average case this amounted to approximately 150 gm. of fat and 150 gm. of protein for the first diet and 50 gm. of fat and 150 gm. of protein for the second. When it was necessary to alter the diets in order to meet the caloric requirements of certain patients, the relative proportion of the various constituents of the diets was kept constant.

A number of criteria were used in an evaluation of the effect of the diets on the course of the patients' recovery from hepatitis. Results obtained from liver-function tests performed at weekly intervals, values for the net loss and gain of weight, and finally the total number of days required for complete recovery, in so far as this could be ascertained from all available laboratory and clinical data, were among the criteria applied in comparing the effects of the various diets.

The experimental diets were taken without complaint, and as far as could be determined, no adverse effects were observed to follow the use of either diet. The diet high in fat and protein appeared to have definite advantages over the diet low in fat and high in protein with respect to the relative ease with which an adequate caloric intake could be achieved and maintained (Figure 1). The effect of anorexia in decreasing the total caloric intake, particularly in the acute stage of hepatitis, was far more effectively overcome with

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\* The first four cases of this group were consecutive cases.

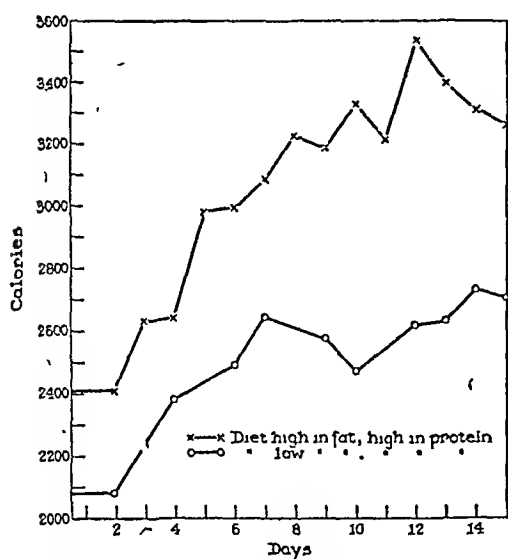


FIGURE 1—A Comparison between the Average Daily Caloric Intake of a Group of 10 Patients with Hepatitis on a High Fat, High Protein Diet and a Group of 10 Alternate Patients on a Diet Low in Fat and High in Protein

the diet relatively high in fat. This difference is readily seen from an inspection of the curves in Figure 1, which show the day-to-day average total caloric intake of the two groups of patients. The accelerated gain in weight (Figure 2) shown by the group receiving the high fat intake, over that shown by the group receiving the low fat intake, attested further to the greater effectiveness of the former diet in aiding the patients to regain the early weight loss in hepatitis. In nearly every instance, patients on the diet high in fat began to gain weight almost immediately in contrast to the patients on the low fat intake, in whom often no weight change was apparent for approximately two weeks following the institution of the diet.

Evidence indicating that the diet high in fat and protein was effective in favoring recovery in hepatitis was supplied by the results of at least one test of liver function, namely, the retention of bromsulfalein. This test, which we have reason to believe is one

of the most sensitive available for indicating changes in the liver in hepatitis,<sup>4</sup> was performed on each patient in both series upon admission, and at weekly intervals throughout the course of convalescence. Results obtained on 30 patients (15 in each group), in whom the two dietary regimens were instituted within the first week of the disease, and maintained throughout convalescence, revealed that normal values for bromsulfalein retention were obtained on the average by the 25th day in the group on the high fat, high protein regimen, and by the 33rd day for the group receiving a diet low in fat and high in protein. The time required for both groups was considerably less than that necessary for a larger series in whom treatment with the two diets was begun somewhat later in the course of the disease. The results indicate that for maximal effectiveness treatment by diet should be begun as early as possible in hepatitis. In this way, through careful attention to the patients' reaction to food, opportunity is provided to offset the effects of anorexia in reducing

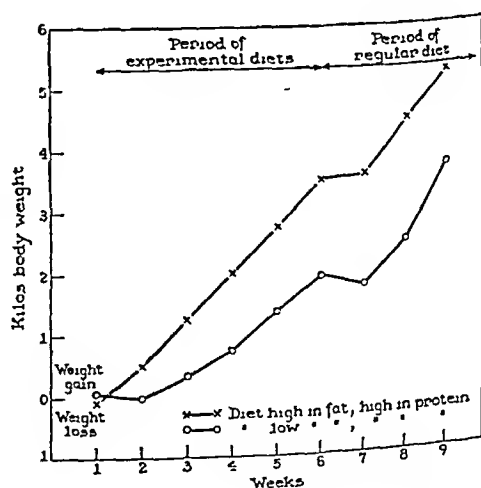


FIGURE 2—A Comparison between the Average Weekly Increase in Weight in a Group of 37 Patients with Hepatitis on a Diet High in Fat and High in Protein and in 33 Patients on a Diet Low in Fat and High in Protein

the total caloric intake in the early stages of the disease when hepatic damage is likely to be greatest.

#### DISCUSSION

It is obvious from the results of these studies that the prevailing dictum against the inclusion of fats in the diet in the treatment of acute infectious hepatitis is unjustified. Indeed, slavish commitment to diets extremely low in fat has made the task of maintaining an adequate caloric intake in acute liver insufficiency needlessly difficult. Indictment of fat as a "liver poison" has proceeded within recent years from the experimental production of damage to the liver in animals consuming diets which were excessively high in fat. It should not be forgotten, however, that in order to achieve significant damage to the liver with diets high in fat it has been necessary to restrict the intake of protein to exceedingly low levels. In addition, review of the experimental data reveals that in the selection of the fatty components of the experimental diets, extreme care has been exercised to exclude phospholipids, choline and other lipotropic agents.

Contrary to current medical opinion, patients with acute inflammatory disease of the liver, such as that produced by severe hepatitis, have been shown by the results obtained in this study to tolerate fats extremely well. No adverse consequences followed the consumption of 150 gm. of fat daily, together with the ingestion of an approximately equivalent weight of protein. The accelerated gain in weight which followed the inclusion of fat in the diet indicated that utilization of the fat occurred in the presence of severe damage to the liver. The fact that pathological values for the retention of bromsulfalein were maintained for a shorter interval in the patients receiving the high fat, high protein diet, than in those receiving a low fat, high protein diet,

indicates that the former diet may have had advantages over the latter in fostering repair of the liver. It should be emphasized that the fats used in the experimental diet high in fat were derived chiefly from milk, cream and butter, and were not subjected at any time to exceptionally high temperatures in cooking. Fats from these sources, moreover, are relatively high in unsaturated fatty acids and fatty acids of comparatively short carbon chains.

Stetten and Salcedo<sup>10</sup> showed that the severity of the fatty changes in the liver of animals deficient in choline was influenced greatly by the length of the fatty acid chains of the dietary fat. The intensity of the fatty infiltration observed in the liver in choline deficiency was found to increase markedly as the chain length of the dietary fatty acid successively decreased from 18 to 14 carbon atoms. However, no fatty livers were observed when esters of fatty acids of less than 12 carbon atoms were fed. Finally, it should be emphasized that the large quantity of protein which was included in the high fat diet afforded a rich source of lipotropic agents, which was further augmented by the high concentration of choline and lecithin contained in the fat itself.

In any case it is evident that present concepts regarding the toxicity of fat in the diet in the presence of hepatic damage should be redefined, and that in planning a diet for the treatment of acute damage to the liver, emphasis should be shifted from a consideration of the total amount of fat in the diet to the type of fat, and to the concentration of protein and other lipotropic agents which accompany it.

#### SUMMARY AND CONCLUSIONS

A comparative study has been made between the effects of a diet low in fat and high in protein and a diet relatively high in fat and high in protein on the

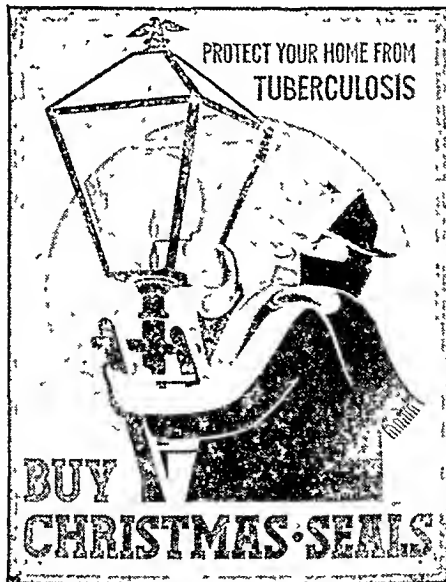


period required for recovery in 70 patients with infectious hepatitis in whom there was moderate to marked acute liver insufficiency.

No harmful effects were observed to follow the administration of a diet high in fat in patients in whom the intake of protein was kept correspondingly high. Indeed, the diet high in fat appeared to have decided advantages over the diet low in fat with respect to the maintenance of an adequate caloric intake, particularly in the acute stages of the disease. With the former diet, weight loss was minimal in the acute stages of hepatitis and gain in weight maximal in convalescence. Added evidence of the superiority of the high fat, high protein diet was indicated by the results of serial tests of bromsulfalein retention which revealed normal levels for the patients on the high fat, high protein diet earlier than the group on the high protein, low fat regimen.

## REFERENCES

1. Opie, E. L., and Alford, L. B. The Influence of Diet on Hepatic Necrosis and Toxicity of Chloroform. *J.A.M.A.*, 62:895, 1914.
2. Goldschmidt, S., Vars, H. M., and Ravdin, I. S. The Influence of Foodstuffs upon the Susceptibility of the Liver to Injury by Chloroform, and the Probable Mechanism of Their Action. *J. Clin. Investigation*, 18:277, 1939.
3. Mann, F. C. Diet in Relation to Hepatic Physiology and Pathology: A Review of Pertinent Data. *J. Am. Dietet. A.*, 19:560, 1943.
4. Hoagland, C. L., and Shank, R. E. Infectious Hepatitis: A Review of 200 Cases. *J.A.M.A.*, 130:615, 1946.
5. Ravdin, I. S., Thorogood, E., Riegel, C., Peters, R., and Rhoads, J. E. The Prevention of Liver Damage and the Facilitation of Repair in the Liver by Diet. *J.A.M.A.*, 121:322, 1943.
6. Patek, A. J., Jr. Dietary Treatment of Laennec's Cirrhosis with Special Reference to Early Stages of the Disease. *Bull. New York Acad. Med.*, 19:498, 1943.
7. Roholm, K., and Iversen, P. Changes in the Liver in Acute Epidemic Hepatitis (Catarrhal Jaundice) Based on 38 Aspiration Biopsies. *Acta. path. et microbiol. Scandinav.*, 16:427, 1939.
8. Lucké, B. I. The Pathology of Fatal Epidemic Hepatitis. *Am J. Path.*, 20:471, 1944.
9. Virchow, R. Ueber das Vorkommen und den Nachweis des hepatogen, insbesondere des katarthalschen Icterus. *Virchow's Arch. f. Path. Anat.*, 32:117, 1865.
10. Stetten, D., Jr., and Salcedo, J., Jr. The Effect of Chain Length of the Dietary Fatty Acid upon the Fatty Liver of Choline Deficiency. *J. Nutrition*, 20:167, 1945.



# Post-war Program for Abatement of Pollution in New York Harbor\*

RICHARD H. GOULD

*Director, Division of Engineering and Architecture, Department of Public Works,  
New York, N. Y.*

THIS discussion of the program for the abatement of pollution of New York Harbor in the post-war period will be concerned primarily with the plans of New York City. Of the population whose discharges pollute the harbor, about 70 per cent reside in New York City, about 10 per cent in the Passaic Valley Sewerage District of New Jersey, and the remaining 20 per cent in other communities in the States of New York and New Jersey.

The history of pollution abatement in New York Harbor extends over many years and until recently has been discouragingly barren in recording results of a comprehensive nature. This is perhaps not strange when we consider the multitude of political subdivisions of the area that involve many separate cities and districts lying in two sovereign states. The great natural resources of the harbor for the assimilation of sewage have been sadly overtaxed but it has been hard for individual communities to treat their sewage when other communities equally at fault are not willing to take action. This deadlock appears about to be broken since New York City, quite properly it seems, has embarked on a comprehensive program for the treatment of all of its sewage. The regional nature of

the problem of New York Harbor has been recognized in the creation of the Interstate Sanitation Commission by New York and New Jersey and later joined by Connecticut, so that the political complexities now seem well on the road to solution.

New York Harbor is purged by the fresh water flows from the mighty Hudson River. Through the connection to the ocean at the Narrows and to Long Island Sound at Throggs Neck large tidal flows carry salt water into and out of the harbor and distribute and mix polluting flows throughout its large area. These very advantageous natural conditions permitted the city to proceed with its unrivaled growth and expansion without giving much consideration to sewage pollution for many years. Deplorable conditions, however, existed as long as 40 years ago and have grown progressively worse until stemmed in part by recent corrective measures. Even now there are waterways such as Newtown Creek that are in a condition of active nuisance. There are large areas otherwise adaptable for recreational use that cannot safely and satisfactorily be used for that purpose. The large ocean beaches at Coney Island and Staten Island are affected and are not adequately protected. Walkways along the waterfront in parkways at Bay Ridge in Brooklyn and the upper west side of Manhattan and elsewhere are subject to the odors

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and unsightly aspects of raw sewage flowing along the shore. The hygienic aspects will be apparent to this body.

Outside of New York City the first major project to be placed in operation was that of the Passaic Valley Sewerage District in 1924. This project resulted in the correction of extremely offensive conditions in the Passaic River, but although the sewage is given primary treatment the discharge of the effluent in New York Harbor near Robbins Reef has resulted in an added burden to the inner harbor. Other works discharging to tidewater include the South Yonkers screening plant of Westchester County in 1930, Perth Amboy in 1935, and The Joint Meeting plant at Elizabeth in 1936. The smaller works on the Raritan, Rahway, Hackensack, and Hudson Rivers are primarily of local significance.

In the area of New York City treatment plants were built as far back as 1882, but it was not until late in 1929 that the jurisdiction over sewage treatment was recognized as a city-wide function and taken from the five Borough Presidents and placed in a central city department. This function is now the responsibility of the Department of Public Works. The central department inherited some sixteen treatment plants of sorts, mostly of the fine screening type and generally ineffective as a part of the overall picture.

Construction of modern treatment works under a comprehensive plan for the entire city that takes into account all the complex elements of the problem started in 1931 on the large Wards Island project. Unfortunately this work was held up by the depression but was resumed in 1934 with federal aid and the works were placed in operation in 1937. In the meantime the first element of the Coney Island plant was built, also with federal aid, and placed in full operation in 1935. Additional plants were built with City money only.

Tallmans Island was placed in operation in 1939, an extension of the Coney Island plant in 1941, complete treatment at Bowery Bay and the City Island plant in 1942, the Jamaica plant in 1943, and partial treatment at the 26th Ward plant in 1944. At the present time the city operates thirteen sewage treatment works. Six are older plants and seven are newly constructed. About 410 m.g. of sewage is treated per day representing a little over 40 per cent of the sewage originating in the city. The new works represent a cost of some \$58,000,000. From the foregoing record it is apparent that New York City is fully alive to the necessity for the abatement of pollution in New York Harbor and has been making steady advances in its accomplishment.

That the accomplishments in the post-war period will be even more impressive is evidenced by the very large program that is now in a well advanced planning stage. When it became apparent in the summer of 1941 that war activities would preclude further civil construction, it was decided to proceed with detailed plans for a large schedule of essential projects that would be carefully developed and ready to build when man power and funds again became available. One of the programs holding a high priority in this schedule is that for the city-wide sewage treatment. It is listed in the Capital Program of the city in the amount of about \$107,000,000 at 1939 prices. As will be seen from Table 1, this program includes 9 extensions and additions to existing locations, and the construction of 5 new plants. The present general plan for sewage disposal calls for 17 treatment locations with an installed capacity of 1,453 m.g.d. The present installed capacity is about 30 per cent of this figure and that in the post-war program about 64 per cent. When the works in the post-war program are built the city will have reached about 94

per cent of its objective. Tentative schedules call for the completion of construction and operation of the works by the end of 1950. What the realities of the situation will be is unpredictable and will, of course, be contingent on the availability of funds, upon city and other governmental policies, and the other uncertainties of a world undergoing reconstruction.

sewage treatment from the results of works now operating.

Prior to the construction of the Wards Island Project the Harlem River was a filthy stream, unsightly and odorous. Bordering areas were blighted. Since then the East River Drive has been built and is to be extended north along the Harlem. Housing developments and a high school have been built

TABLE 1  
*Sewage Disposal Projects — 1946 Capital Budget*

Project No.	Title	Total Cost 1939 Base	Funds Adopted	
			City	Federal (anticipated)
PW 19	26th Ward	\$ 6,550,000	\$ 2,893,400	\$
PW 112	Existing Plants	400,000	400,000	
PW 55	Rockaway	2,800,000	2,665,000	
PW 102	E. Bronx Intercept. Sewer	815,000	765,000	
PW 56	Hunts Point	14,000,000	2,340,000	6,860,000
PW 54	Owls Head	14,500,000	1,200,000	8,200,000
PW 101	Port Richmond—1st Stage	1,000,000		850,000
PW 53	Newtown Creek	25,800,000	200,000	7,000,000
PW 113	Sludge Vessels	4,000,000	30,000	
PW 103	Wards Island—Extension	29,300,000	200,000	
PW 118	Bowery Bay—2nd Stage	6,500,000	100,000	
SIF 108	Whitestone Intercept. Sewer	1,300,000		
PWS 27	Coney Island—Alterations	300,000		
PWS 28	Jamaica—Landscaping	42,000		
PWS 29	Bowery Bay—Landscaping, etc.	89,000		
HOS 2A	Welfare Island Sewers	450,000		
Totals		\$107,846,000	\$10,793,400	\$22,910,000

With this general overall picture of past accomplishments and future programs one may well inquire as to the necessities and urgencies that lead New York City to embark on a program of sewage treatment that will add many millions of dollars to the annual operating budget. The answer lies in the very practical matter of self-preservation. It includes the preservation and restoration of real property values, the preservation and restoration of recreational facilities, the preservation of health, and, by no means unimportant, the preservation of decent environmental conditions. Fortunately, it is possible to demonstrate the value of

on its banks and a general face lifting and reclamation of values is taking place. Thus the Wards Island project is paying dividends in a very tangible form locally and its influence is of equal importance elsewhere throughout the harbor in the general reduction of the polluttional load. In a similar way the Coney Island Project has corrected conditions of active nuisance in Coney Island Creek, Shellbank Creek, and Paerdegat Basin with consequent benefit to the value of local areas and the improvement of the nearby water areas for recreational use. Like stories can be told of the Flushing River, Flushing Bay, and Bowery Bay, near the La

Guardia Airport, as a result of the operation of the Tallmans Island and Bowery Bay plants. A marked improvement of the boating and recreational center around City Island has resulted because of sewage treatment there. Thus it is that while costly, sewage treatment pays its own way and is essential and indispensable. Had New York City not taken energetic action in this matter, values and environmental conditions would have grown progressively worse and many other important improvements would have lost much of their value.

The legalistic standards for sewage treatment that now apply to the Metropolitan waters are those adopted by the Interstate Sanitation Commission, an instrument of the States of New York, New Jersey and Connecticut. These standards divide the waters into two classifications, namely "A" and "B." The "B" waters are the inner harbor waters not now used primarily for recreation, and here a treatment that will remove 10 per cent of the suspended solids and not permit the dissolved oxygen content of the waters to drop below 30 per cent of saturation is required. Actually an average treatment greatly in excess of 10 per cent removal is required to meet the latter requirement of residual dissolved oxygen. The "A" waters are the outlying waters used primarily for recreation and shellfish growth. Sewage effluents discharging into these waters must have had at least 60 per cent of the suspended solids removed and be treated so that not more than 1 *B. coli* per ml. is present in 50 per cent of the test samples. These standards furnish a convenient mechanism for administration but because of the nature of the local tidal currents do not in themselves assure that all waters in the "A" group can be safely used for recreation and shellfish growth.

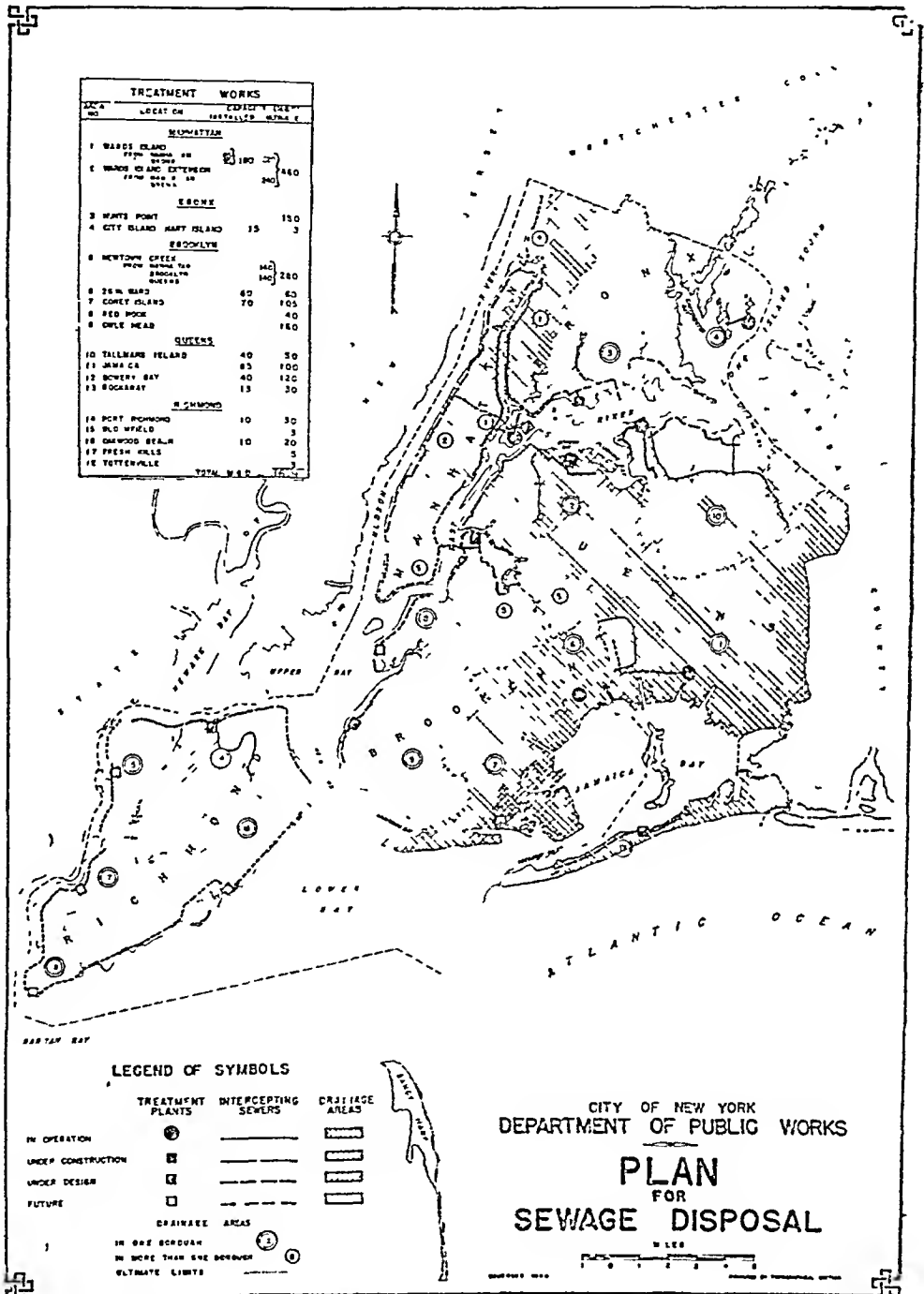
The extent of treatment adopted in

the New York City program is substantially higher than the minimum requirements of the Interstate Sanitation Commission and is influenced by a consideration of the effect of tidal flows on adjacent areas. In spite of the fact that New York Harbor waters receive the flows from the Hudson, Passaic, and Hackensack Rivers, and the interchange with sea water is considerable, most of the sewage remains within the harbor long enough to exert most of its oxygen demand. This is particularly true of discharges to the East River and to Jamaica Bay and it is in these areas that the most extensive treatment is given.

There are four types of treatment used in the new plants. These include the activated sludge process and modifications thereof known as "step aeration" and "modified sewage aeration." The fourth type is the seasonal chemical plant, such as used at Coney Island, but this is not called for in the post-war program. In this program four plants will incorporate the principles of "step aeration," three others those of "modified sewage aeration," and one smaller plant will call for plain sedimentation.

The "step aeration" plants are expected to give results comparable to the standard activated sludge installations, and can in fact be operated as such. The provision of means for adding increments of settled sewage at several points in the aeration tanks, in view of our past experience, has made us feel justified in reducing the size of these tanks below previously accepted standards.

"Modified Sewage Aeration" is a comparatively recent development of this department and with which we have had only two years' experience under full scale plant operation. It was evolved from experimental work started to explore the possibilities of the activated sludge process for partial treatment under low solids concentra-



tion. It is anticipated that overall removals approaching 80 per cent in B.O.D. and S.S. will be obtained, that the excess sludge can be concentrated to 5 to 7 per cent solids, and that air consumption will not exceed 0.4 c.f. per gallon. The plants will be in locations

that might otherwise call for plain sedimentation or seasonal chemical treatment. The chlorine demand of the "modified" effluent is much less than for the other types.

Sludge from the new plants will be digested and digester gases utilized for

power and heat. This is dictated by the necessity of eliminating odor hazards in the handling of raw sludge near closely built up areas and by the economics of sludge handling. While a small part of the digested sludge will be utilized on land and park areas, our main reliance will be on its disposal at sea. In the large quantities involved, this has proved to be most economical and entirely unobjectionable.

In general the types of treatment plants that are to be built are determined by our policy of utilizing the natural capacity of the local waters for the assimilation of sewage to a reasonable extent and of securing the maximum possible removal of polluting material per dollar spent on construction and operation. It is to be anticipated that future desires will be for ever

cleaner waters. The present program is sufficiently above the minimum that would "get by" present requirements so as reasonably to anticipate such desires. The additional costs involved over a minimum program are surprisingly small.

If we are allowed to proceed with our program for sewage disposal as planned, the backbone of the pollution hazards in New York Harbor will be broken. Plans for other areas outside of New York City are being made. I believe dependence can be placed on the smoothly working team comprised of the Health Departments of the States of New York and New Jersey and the Interstate Sanitation Commission to see to it that the entire program for the metropolitan area advances consistently on all fronts.

## Price of Care Packages Reduced One-Third

General William N. Haskell, Executive Director of Care (Cooperative for American Remittances to Europe, 50 Broad Street, New York 4) reports that the price of the standard Care package has been reduced from \$15 to \$10. This food package was originally designed by the Quartermaster Corps of the U. S. Army. It provides 40,000 calories of fine highest quality American food that was designed to maintain adequately an American soldier under combat conditions for 10 days. One package can supplement present rations for one person for 50 days. Weighing 49 pounds in a waterproof container, it contains approximately 29 pounds of solid food already cooked and easily prepared and includes such additional items as can opener, soap, matches and other vitally needed supplies.

Says General Haskell, "We who work with Care are anxious that all Americans know how they may share the plenty of this country with suffering people abroad, especially at the Christmas season when gifts of food will go a long way to assure our neighbors overseas of our concern for them. We ask your help in spreading that message."

# Work of the Interstate Sanitation Commission\*

SETH G. HESS, C.E., F.A.P.H.A.

*Director and Chief Engineer, Interstate Sanitation Commission,  
New York, N. Y.*

THE Interstate Sanitation Commission is a tri-state agency of New York, New Jersey, and Connecticut, established in 1936, for the purpose of controlling future pollution and abating existing pollution in New York Harbor and the adjacent waters. Its jurisdiction, in general, covers New York Bay and that portion of the Hudson River up to Bear Mountain Bridge, Long Island Sound up to New Haven on the Connecticut shore and Port Jefferson on the northern shore of Long Island, and the ocean front from Sandy Hook, N. J., to Fire Island Inlet on the south shore of Long Island.

Let us inquire the reason for the creation of such a body as the Interstate Sanitation Commission. Going back to the early days of sanitation, one finds that the primary purpose was the collection of sewage and its disposal by burial or by dilution. With the advent of water carriage system by which the pollution was transmitted through pipes in water suspension, it was only natural that this material be carried by the shortest route to the nearest stream or body of water. It is not surprising therefore to find that up until the end of the 19th century, all of the municipalities in this area used the Hudson and East Rivers, New York Bay, Long Island Sound, and the

Atlantic Ocean and the various tributaries for that purpose.

It is hardly conceivable that the engineer of those early days could have anticipated a growth of population so great that these enormous bodies of tidal waters would be unable to assimilate the load. The huge increase in population, not alone of New York City but of the adjacent municipalities in the Metropolitan area, soon placed a load on these waterways which gave evidence of taxing their capacity of assimilation, and at the turn of the century, this condition was well recognized. As far back as 1903, the New York State Legislature appointed the New York Bay Pollution Commission. Its report showed conclusively the immediate need of sewage treatment but, though the need was recognized, a quarter of a century passed before even the first steps of any consequence were taken to correct the situation. Although numerous reports were prepared, it was not until 1936 that this tri-state commission was formed.

This Commission is the first interstate agency charged with the actual duties of pollution abatement and clothed with authority to require municipalities and other entities to take steps to abate pollution. The laws establishing the Interstate Sanitation Commission fix the quality of the effluent which may be discharged by any sewage treatment works. It gives the Commission the right to conduct

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hearings, to investigate conditions, to determine if the creation of a temporary source of pollution would be in the best public interest, and to issue orders directing the discontinuance of pollution and prescribe specific progress that should be made at definite times prior to the final date fixed in such order. The Commission is given authority to bring action in the appropriate court to compel the enforcement of the provisions of the Tri-State Compact or of the orders of the Commission.

It may be seen therefore that it is no longer necessary to attempt to prove a menace to public health or a public nuisance, but instead the condition is judged on physical, chemical, and bacteriological standards.

In what manner does the Interstate Sanitation Commission function? There appear to be several fundamentals which, although not formally expressed, seem to have governed the course of the Commission from its beginning. The first has been to cooperate fully with the State Departments of Health and other state and local agencies, while the second has been to bend every effort toward accomplishing its objectives by persuasive means rather than relying on court action.

At first glance, one would think there is an overlapping of authority by this Commission and various state health departments, and the State Water Commission in Connecticut. This has not proved to be so. The State Health Departments proceed in their usual manner to bring about the construction of pollution abatement works, and where the state agencies do not have authority to require the abatement of pollution because of the difficulty of proving a public health menace or public nuisance, this Commission is in a position to lend its efforts toward this end. The Commission is also empowered to prescribe in its order cer-

tain specific progress that shall be made at definite times prior to the final date fixed in such order. This allows us to keep our hand directly on the pulse of the activity and should a municipality or other agency fail to make suitable progress, it is not necessary to wait until the date fixed for the completion of the plant has passed before action is taken.

Neither do the activities of the Commission and those of the State Health Department overlap in determining the character of treatment works to be constructed. Although the Compact establishes certain standards which must be met by the effluent from that plant, the approval of the plans for the plant is entirely in the hands of the State Department of Health which reviews the plans, keeping in mind that the plant shall be of such a nature or character that it will be able to produce an effluent to meet the Compact requirements. Should the Department of Health deem that a higher degree of treatment is desirable, it is entirely within their jurisdiction to require it. It is only when the plant is completed and in operation that this Commission assumes the authority to require that the plant effluent meet the Compact standards.

When the Tri-State Compact was drafted, it was recognized that a single standard should not be established for the entire district, but should be varied for discharges into waters used for different purposes. When waters are expected to be used for recreational purposes, shellfish culture, or the development of fish life, the pollution before being discharged into these waters must be so treated as to remove 60 per cent of the suspended solids, to reduce the coliform organisms to not more than 1 per ml. in 50 per cent of the samples, and to treat the polluting material so that the dissolved oxygen of the waters in the vicinity of the outfall shall not

be less than 50 per cent saturation during any week in the year.

When the pollution enters an area which is not expected to be used for the purposes above enumerated, that is to say, an industrial area, the standards are very much more lenient and require a removal of only 10 per cent of the suspended solids and a reduction in the oxygen demand so that dissolved oxygen in the vicinity of the outfall shall not be less than 30 per cent saturation during any week of the year.

It may be seen therefore that one purpose for creating the Commission was to coördinate and, if necessary, require the construction of sewage treatment works. It has a further purpose, and that is to see that the plants within the District operate in such a manner as to discharge an effluent which meets Compact standards. The means by which the Commission operates to carry out these two functions are briefly as follows:

#### *Construction of Sewage Treatment Works*

The Commission undertakes an educational campaign among the citizens and municipal authorities to make them cognizant of the need as well as advantages of pollution abatement and the construction of sewage treatment works. This is carried out by press releases and appearances before various service groups and the like. Conferences are held with municipal officials, and an attempt is made to discern the difficulties inherent in each individual problem. If necessary, hearings are ordered and an honest effort is made to determine how rapidly the municipality can undertake a pollution abatement program. Not infrequently the financial condition of a municipality is such as to make immediate construction of sewage treatment works a hardship. The Commission staff may review the financial status of the municipality and

its bond redemption program. From such a financial study, it may be possible to fix a reasonable date at which the municipality can undertake a pollution abatement program.

It is usually possible to provide funds through sewer rentals, by issuing self-liquidating bonds even in excess of the statutory bond limitation. It has been the Commission's policy, however, to permit the municipality, wherever possible, to choose its own means of financing, providing vigorous effort is made to bring about pollution abatement at a reasonable date.

Following this, the Commission in the past has permitted municipalities to defer action from 5 to 8 years if a constructive program was established which would ultimately place a municipality in a financial position to undertake the cost of constructing the necessary works to abate pollution. After a hearing has been held to establish a program which can be met by the municipality and which is reasonably in line with the general program of advancement in the District, the Commission issues an order setting forth not only the time when pollution shall have been abated, but, likewise, intermediate steps such as the engagement of an engineer, and designating the date for the beginning of construction. By fixing these preliminary dates in the order, the Commission can at an early time determine if a municipality is proceeding with sufficient vigor to meet its ultimate goal. Should there be some delay in the preliminary dates, investigations are made, and, if warranted, an extension is granted. The Commission has not yet encountered a condition where an extension of time was not warranted; however should that occur, it is reasonable to assume that legal proceedings would be instituted to enforce the provisions of the order. I repeat—the Commission bends every effort toward obtaining the coöperative action on the

part of the municipality, and it sincerely hopes that it will not become necessary to institute legal action at any time.

In this connection, there is another phase of Commission activity which is of interest. The law provides that no new source of pollution shall be created in the Interstate Sanitation District unless the Commission shall find after due investigation and hearing that such new source of pollution is in the best public interest. As a result, a number of hearings have been held to determine if a new area about to be sewered or a sewer district desired by a municipality best serves the public interest. In each case where the Commission has found the construction of such sewers and sewers outlets to be in the best public interest, an order has been issued, so finding, but with provisions fixing the time when pollution abatement works shall be constructed.

#### *Plant Operation*

The second phase of the Commission's activities is concerned with the operation of sewage treatment works. This requires periodic inspections of the various plants during which half hourly samples of the influent and effluent are taken, and a morning and afternoon composite is made. Two basic tests determine compliance with Compact requirements: amount of suspended solids and number of coliform organisms. In addition, we observe the flow, the hydrogen ion concentration in the influent and effluent, and the residual chlorine. We also make determinations of settleable solids and biochemical oxygen demand.

Up to the present time, no effort has been made to make any routine tests of the dissolved oxygen in the vicinity of the outfall. During 1939, a very complete dissolved oxygen survey of all the waters of the Interstate Sanitation District was made, and when funds are available we hope to repeat this survey,

thereby showing the trend throughout the Interstate Sanitation District. Dissolved oxygen in the vicinity of the outfall has been studied only in certain critical cases and where it seems that such information will be of special value in connection with the Commission's activities.

In closing, it might not be remiss to outline the manner in which an interstate agency of this character is created. Unfortunately, heretofore, pollution conditions had to become sufficiently aggravated to arouse public opinion to demand some organized program to accomplish the abatement of pollution. It is to be hoped that present experiences may make it possible to establish these programs before conditions become acute. However, let it be remembered when timing such action that even with the greatest coöperation on the part of all concerned, it is likely to take 5 years or more to bring about the accomplishment of an interstate compact.

In the case of the Interstate Sanitation Commission, the Legislatures of three states involved appointed a commission for the purpose of framing a suggested treaty and accompanying legislation. On such a legislative commission should be representatives of the state agencies involved in the program: namely, the state health departments and, as in Connecticut, the State Water Commission, as well as the agencies having to do with fish and shellfish propagation; members of the Legislature, preferably those who are members of the Legislative Committees on Interstate Coöperation; representatives of business and industry. The work of such a commission is not to be lightly considered. It requires a great deal of investigation and a broad administrative outlook in order to develop a satisfactory well rounded compact. Appropriations should be available to engage a staff to make such research as may

be necessary to supplement that which might be available through such state agencies as the department of health, etc. With such a background, the next step would be the actual adoption of the proposed measure by the various legislatures, if possible, with provision that the compact become operative before all of the proposed group have adopted it.

Interstate agreements for various purposes are not new. Many compacts, treaties, and agreements have been entered into between various states, having to do with many subjects, such as water supply, power, fisheries, fishing rights, crime and police powers, and innumerable others. The subject of pollution however, although an old problem in interstate waters, has only recently been the subject of formal joint action by the interested states.

The form of these interstate treaties or compacts follows two general lines:

The first, establishing a commission charged with certain responsibilities and

authority to require the execution of its orders.

The second provides for a commission or other agency which after study and conference recommends action to be undertaken and executed by the various states or departments within the state.

Both forms have been used for about eight years and satisfactory progress has been made in pollution abatement under both methods. The Interstate Sanitation Commission falls under the first category.

Substantially all of the federal bills concerning pollution abatement that have been introduced in Congress recognize existing interstate compacts and encourage the formation of interstate commissions and agreements. The need for pollution abatement control is being more widely accepted as time goes on, and there is every reason to believe that pollution in interstate waters can be controlled and abated by the co-operative action of the several states involved, through interstate compacts or treaties.

# In-Service Training in a Rural Health Department\*

PHILIP A. BEARG, M.D., DR.P.H., AND RUTH STOCKLE, P.H.N.

*Department of Public Health, San Luis Obispo County, California*

ONE challenging duty of a health officer is to see that every staff member profits by his association with the department through mental stimulation, increased technical knowledge, maturation of judgment, and personality development. This task of overseeing the professional growth of an agency staff is one of the most neglected opportunities confronting the health administrator. How can this job best be done?

Occasional meetings, such as this,\* occur too infrequently to be of real value in staff education. It is difficult to get an appreciable percentage of a rural agency staff to a meeting held two hundred miles away. Field visits to other agencies are expensive and impractical when attempted for an entire staff. Intensive field experience in other agencies is an impossibility without outside subsidy.<sup>1</sup> If money is available, such field experience is a long-term program which only benefits a small percentage of any agency staff during any given period.

Importing skilled instructors to conduct institutes is splendid procedure, but this occurs too infrequently in most rural agencies to be of lasting value. To meet the major need, a rural agency must develop an in-service training program which utilizes its own personnel and resources. The members of a rural health agency must train themselves.

What may be achieved by such in-service training?

The fundamental objectives of an in-service training program have been summarized by Dr. George T. Palmer<sup>2</sup>:

1. To make up for deficiencies in technical and scientific information required for the job generally.
2. To enlarge the outlook and understanding on the specific job.
3. To acquaint the staff with the fundamentals of personal and public relationships in order to encourage smoother functioning of the day-to-day job.
4. To keep the staff abreast of newer, technical, procedural and administrative developments as derived from experience in other jurisdictions.

San Luis Obispo has attempted to meet these objectives by a locally conducted staff education program.

This department became interested in in-service training one year ago through dire necessity. At this time three vacancies existed on the sanitarian staff. There were no candidates for these positions who had any background in sanitation or public health work. As a result, the department was forced to hire three completely untrained men, ranging in age from 21 to 57 years. All three were high school graduates, eager to learn. A series of twelve intensive two hour sessions were given on the various aspects of environmental sanitation. Sessions occurred twice weekly and were attended by the health officer, assistant health officer, and chief sanitarian, in addition to the three trainees. The method of presentation was that a one hour formal lecture period, given by either the health officer or chief sanitarian, was followed by one hour of discussion and questions. Outside reading assignments were given and the trainees were required to submit papers once weekly on some aspect of the work dis-

\* Presented before the Southern California Public Health Association at its Annual Meeting, March 22, 1946, in Pasadena, Calif.

cussed. These papers were then considered in class after being graded by the three amateur "professors."

It is interesting that there was frequent disagreement among the "professors" as to the grades, both relative and absolute, to be given the students. The subjects covered at the sessions included water purification, sewage disposal, milk handling, sanitation of eating establishments, rodent control, introduction to epidemiology, rashes, enteric diseases, the laboratory in relation to the sanitarian, housing, nuisances, public relations, etc. The classroom work was supplemented by field experience with the chief sanitarian to correlate the theoretical presentation of the classroom with the practical experience of the field. The net result of this course was that the department developed three sanitarians capable of carrying on their work with supervision.

The health department at this time was undergoing a considerable turnover in both trained and stenographic personnel. Each new replacement, as he or she was hired, was given an orientation session with the various departmental heads. This helped each new individual to understand his relationship to the overall functions of the health department.

Because of the turn-over in personnel, it seemed desirable to review and evaluate the activities of the local department with the entire staff. General staff meetings were held monthly for this purpose.

At all times, the staff was encouraged to regard every aspect of the local program critically. It was emphasized that all programs must be constantly reappraised to serve the public most efficiently. The venereal disease, tuberculosis, communicable disease, crippled children, school health, maternal and child health, sanitation, laboratory, vital statistics, nursing, and administrative programs of the health department were discussed by various members of the agency. The ensuing discussions, in which the entire staff participated, frequently brought to light obsolete practices. Many helpful suggestions were made.

Individual staff members were encouraged to review independently any activity in which they were interested. They were requested to discuss any suggestions they might have with the health officer. At first, only a few diffident suggestions were made. As the staff meetings continued, less and less shyness was noticed. More and more valuable ideas were brought to light.

One major advance resulting from the participation technique was that the entire staff

agreed and pointed out to the health officer that a health educator was necessary for the county. The local tuberculosis association was ready to hire a full-time executive secretary. The health officer, as a board member of the tuberculosis association participating in the selection of the executive secretary, was able to set up health education experience and training as part of the job requirements. Thus, voluntary funds provided this important personnel for the county.

Another advance resulting from these staff conferences was that discussions of the school health program indicated the need of a coordinating committee made up of both school and health department personnel to revise school health practices. This culminated in the establishment of a permanent regular meeting committee whose activity has done much to improve the school health program.

Questions asked at staff meetings and at informal discussions in the department indicated a need and desire by the entire staff for discussion of various broad phases of public health. Accordingly, it was decided to have, as a feature of the monthly staff meetings for the present year, a discussion of some particular aspect of public health of general interest. A representative committee consisting of a staff nurse, a sanitarian, the health educator, and the health officer was selected to serve as program committee. The following is a partial list of the subjects selected for discussion:

1. Organized medical care
2. Community organization and health education techniques
3. The Gunn-Platt report on voluntary health agencies
4. Infant mortality
5. Restaurant sanitation
6. Organization and administration of health departments, including the Emerson report
7. Health practice indices; the use of the A.P.H.A. evaluation schedule
8. Brucellosis
9. Consideration of changing causes of death. New public health problems
10. Control of airborne diseases
11. Mental hygiene in the child health conference

Three people are selected for the presentation of each subject. Each discusses some aspect of the problem. Thereafter, the meeting is thrown open for general discussion. Interested members of the community are invited to attend. The program committee suggests the bibliography to the prospective speakers, but each speaker is encouraged to select supplementary material of his own.

Both professional and secretarial personnel participate. It is of interest that an outstanding presentation was made by our office manager on "A Medical Program for the Care of Migrant Farm Workers."

It must be recognized that effective learning depends upon the creation of a need in the individual being "educated." Often a need for information arises in relation to some particular current problem. This is the time to plan staff education along this line.

In-service staff meetings serve to increase intra-agency relationships and understanding. As a direct consequence, the department functions more smoothly.

It is possible to have this type of self-contained in-service program under the most adverse conditions. The major difficulty which has been encountered to date is in the lack of adequate library

facilities and good reference material. This difficulty is not insurmountable.

The methods described here are an important adjunct to the other in-service training methods of refresher courses, field visits to other agencies, institutes, intensive field experience in demonstration agencies, and schooling on stipends.

Locally conducted in-service training in this agency has yielded benefits in program planning. It has served to stimulate members of this staff to seek further knowledge via other in-service training methods so that they may better serve in their present positions.

#### REFERENCES

1. Underwood, F. J. In-service Training in a State Department of Health. *A.J.P.H.*, 36, 4:351 (Apr.), 1946.
2. Perrott, G. St. J. A Comprehensive Training Program for Public Health Personnel. *A.J.P.H.*, 35, 11:1155 (Nov.), 1945.

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## Control of Gastric Cancer

December 5 and 6 are the date for a conference to consider new methods of attack on gastric cancer, to be held at Billings Hospital, University of Chicago. In making this announcement, Dr. Thomas Parran, Surgeon General, U. S. Public Health Service, explained that arrangements for the meetings have

been made by the Gastric Cancer Committee of the National Advisory Cancer Council.

This will be the third conference on gastric cancer to be sponsored by the Council. Dr. George M. Smith of Yale University is chairman of the Gastric Cancer Committee.

# A Reverse Approach to the Fluorine-Dental Caries Hypothesis

ROBERT A. DOWNS, D.D.S.

*Director Dental Health, Colorado State Division of Public Health, Denver, Colo.*

AND

FREDERICK S. McKAY, D.D.S.

*Colorado Springs, Colo.*

THE necessity for this study was brought about by repeated reports from Montrose, Colo., that the dental caries rate was extremely high, and that the city water supply contained 1.4 p.p.m. of fluorine. Our present-day knowledge has amply demonstrated that a high dental caries rate and 1.4 p.p.m. of fluorine in the water supply of any community do not exist together. Therefore, the situation in Montrose demanded investigation.

The principal source of the Montrose city water supply is Cimarron Creek, but during the summer it is augmented by water from the Gunnison River.

An examination of the high school pupils was made in January of 1945, the primary purpose being to ascertain the actual prevalence of dental caries among the students native to that community. A total of 406 high school pupils were examined, of which only 77 were found to be actually natives to the community proper. These 77 native individuals showed an average of 10 plus carious areas per person, and of these 77 individuals only one was found to be entirely free from dental caries. It was also found that the loss of teeth, because of dental caries in this group, was 0.818 per individual, which is almost one per person. The average age for this group was 15 years. It is important to note that no trace of dental fluorosis (mot-

tled enamel) was found in the teeth of any of this group of Montrose natives. The purpose of this segregation was to relate the caries prevalence with a continuous use of the city water supply.

As the examination proceeded, however, other pupils were observed who presented typical examples of dental fluorosis, none of whom had been born or reared in the city of Montrose. These individuals came from various other communities in which fluorosed enamel was known to be endemic. There was a total of 67 such individuals. These 67 fluorosed individuals showed an average of only 1.7 carious areas per person, and of these 67, 27 were entirely free from dental caries. The loss of teeth in this group was found to average 0.179 per person. The dental condition of this group as regards dental caries is seen to be in startling contrast to that of the Montrose natives previously described.

Of particular interest was the fact that a considerable number of these fluorosed individuals had been born and reared in an agricultural district adjacent to Montrose known as Spring Creek Mesa. Invariably the Spring Creek Mesa pupils with dental fluorosis had been reared on water from deep wells. The significant observation is that the pupils raised in these two districts—Spring Creek Mesa and the city



of Montrose—only five to ten miles apart, present a totally different picture in regard to dental caries, which cannot be attributed to anything other than their water supply.

The only conclusion that could be reached from this study was that the report which gave the fluorine content of the city water as 1.4 p.p.m. fluorine was in error. This was established through a later analysis which revealed that the correct fluorine content was 0.3 p.p.m.

The usual direct approach in fluorine studies is that fluorine in a water supply at and above 1 p.p.m. is an indicator of a low caries rate—a rate that has been found to be consistently about three carious teeth per person in those native to and of continuous residence in a community using such a water supply. The reverse approach set forth in this

present study is of particular interest in that, for the first time we believe, a high caries rate in a community has been used as an index of a low fluorine content in the public water supply.

A “low” fluorine content is defined in these studies as being a low fractional part of 1 p.p.m.

SUMMARY OF DENTAL SURVEY OF MONTROSE  
PUBLIC SCHOOL STUDENTS  
MONTROSE SENIOR HIGH

<i>Total Students Checked</i> .....	406
Total natives examined.....	77
Total natives free from dental caries..	1
Total fluorosed persons examined....	67
Total fluorosed free from dental caries	27
Natives average 10.220 carious areas per person	
Fluorosed average 1.776 carious areas per person	
Natives average 0.818 extractions per person	
Fluorosed average 0.179 extractions per person	
No fluorosed enamel in any of the Montrose natives	

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## LABORATORY TESTS IN THE CONTROL OF MILK SUPPLIES

OUR Review Article for the present month deals with a technical problem which has been the subject of controversy for several years. The conflict of viewpoint in regard to methods of milk analysis has been disturbing to the health officer and in some degree has threatened the confidence which the public should have in its official health leadership. We therefore asked Dr. A. H. Robertson who is intimately familiar with the problem to give our readers a full and impartial survey of the issues involved.

Passing over administrative details in the enforcement of the milk control program, the major differences relate to the laboratory tests to be applied. The experts of the U. S. Public Health Service have championed a plan which has been embodied in a milk ordinance and code, adopted by more than a thousand communities in the United States and Canada. It governs the production of all milk in 15 states and, of pasteurized milk only, in 3 other states. The procedure recommended allows for the use of the Standard Plate Count, the Clump Microscopic Count, the Individual Microscopic Count, and the Methylene-Blue Reduction Test, as alternate laboratory criteria; for pasteurized milk, only the Agar Plate Count is recognized.

A system of milk control based on very different procedures has been established in Connecticut. Its laboratory makes no plate counts (except in special cases such as certified milk); but relies for bacterial counts on the direct microscopic methods and—in the case of pasteurized milk—routinely supplements the count by the phosphatase test and a special test for coliform organisms.

It is unnecessary here to repeat the highly technical evidence presented by Dr. Robertson in regard to these various procedures involved in what he calls "Plan A" and "Plan B." Incidentally, these designations are preferable to "the Federal plan" and "the Connecticut plan" since scientific problems should be settled on the basis of cold facts and not on grounds of the "amour-propre" associated with sponsorship. It may be noted, however, that a considerable body of evidence is cited in favor of the reliability of the microscopic test (except with

very low-count samples) and on the additional evidence it yields in regard to the types of bacteria and the presence of bovine body cells in certain diseased conditions. Furthermore, Robertson emphasizes the very special value of the phosphatase test which is demonstrated to be the most sensitive and accurate of all tests for estimating the success of pasteurizing processes; and he believes that the test for coliform organisms may be of significance in pasteurized milk.

Dr. Robertson's specific recommendations with regard to Plan B deal with legal and administrative problems which are of purely local interest to the State of Connecticut and involve no changes in laboratory procedure. With respect to Plan A, on the other hand, he makes three important recommendations with regard to testing technique; the routine testing of all samples of allegedly pasteurized milk by the use of the phosphatase test and the coliform test; the routine examination of all samples of pasteurized milk by the microscopic count; and use of the microscopic count for samples of raw milk from sources which fail to comply, especially when field inspectional methods fail to disclose the cause for high counts or short reduction times.

This is not a matter to be settled by any one expert, as Dr. Robertson would admit; but he has marshalled evidence which makes an impressive case against sole reliance on the laboratory tests included in Plan A. There is a clear challenge here to the experts in this field—and particularly to the experts of the U. S. Public Health Service—to seek some common ground of agreement which can harmonize or combine the values of both Plan A and Plan B. We would urge that the procedure employed by water bacteriologists in their field be applied in this related area. This procedure involves the setting up of coöperative studies in which workers in various laboratories employ several alternative standardized procedures and compare results, with regard to the significance of results obtained in the examination of a considerable series of actual field samples and the time involved in each procedure. In particular, the tests should be set up to include such questions as the following:

What are the relative values and economies involved in the use of Plate Counts and of Microscopic Counts as applied to milk of various bacterial contents?

What are the practical values of the Methylene-Blue Test as compared with Plate Counts or Microscopic Counts as an alternative method of measuring bacterial activity in milk?

What are the practical values of the Phosphatase Test—our only direct measure of the efficiency of pasteurization—and what additional burden would its use for routine testing of pasteurized milk impose upon our laboratories?

What is the practical value of the coliform test as a supplement to the phosphatase test in detecting recontamination of milk following pasteurization?

Only by such a coöperative study, in which advocates of both Plan A and Plan B participate, can the solution be found of a difference of opinion which may otherwise place serious obstacles in the way of an effective system of milk control.

## THE STUDY OF ANTIBIOTICS AS A LESSON IN SCIENTIFIC METHODS

ONE of the most interesting problems in the philosophy of modern science is the relative function of individual investigation and of organized coöperative research. The accomplishments of the military establishments, the National

Research Council, and various governmental agencies show us how much may be accomplished along certain lines by large groups of investigators working on a coördinated plan with ample funds. It is probable that the interest of the federal government in this type of research will be continued and extended in the post-war period; but the single investigator or small group of investigators, working alone with the pure passion of scientific curiosity, have their even more vital rôle to play.

The discovery of antibiosis—the harmful influence exerted by one micro-organism through production of substances which are toxic to another micro-organism—dates back to a paper by Pasteur and Joubert in 1877. These investigators and many others, like Frost in the United States, visualized the possible application of this principle to the treatment of disease. The particular substance of this kind, which is now in the very forefront of medical advance—penicillin—was recognized by Fleming in 1929. Only in 1940 did Florey and his group at Oxford describe the actual therapeutic effect of this substance; and give us our first practical and important antibiotic. Only in 1943 did Waksman report the effects of another antibiotic, streptomycin. These pioneer discoveries were brilliant examples of the opening of new pathways of advance by the imagination of the individual investigator. Fleming and Florey well deserved the knighthoods which they had received and Waksman may rightly be proud of the fame which has made the name of a soil mycologist known to the physicians of the world.

The fact that penicillin had extraordinary power of destroying a wide variety of Gram-positive organisms was quickly established. Its application to the treatment of wounds helped materially to mitigate the horrors of war. In peace its use in the treatment of streptococcal and staphylococcal diseases, of syphilis and of gonorrhea has raised the highest hopes.

During the past year, however, these hopes have become somewhat less exuberant, with respect to its most important field of application, the treatment of syphilis. The best measure of efficacy of treatment in this disease is the relapse of the patient, after his apparent cure and without probable reinfection. The proportion of such relapses began to rise in a disturbing fashion. It was 25 to 50 per cent greater in a series of cases treated in the winter of 1944–1945 as compared with a similar series in the spring of 1944. The urgent question arose as to whether this disconcerting result was due to a change in the potency of the drug or to the development of resistant strains of *Treponema*.

Here was a problem which clearly called for another type of approach, analysis by a large number of investigators of a massive volume of cases by identical or comparable methods. A study of this type was therefore carried out under the stimulus of the Committee on Medical Research of the O.S.R.D. and—in its later stages—financed and directed by the U. S. Public Health Service. Forty-three clinics throughout the nation participated; and twenty-six different treatment schedules were employed.<sup>1</sup> The variables included the type of penicillin used, the dosage, the interval between treatment in hours (3–6) and the number of days for which treatment was continued (from 3.75 to 8.9 days).<sup>2</sup> The major result of this investigation was to demonstrate that the lessened efficiency of treatment which had been observed was due to changes in the composition of commercial penicillin. In 1945 it had been shown that “penicillin” included at least four different chemical compounds (G X F and K) distinguished by specific side-chains. Recent studies have shown that type G is highly potent and that type K is far less effective than the others, probably because it is more rapidly

destroyed in the body. It seems certain that the less satisfactory results obtained with recent penicillin therapy have been mainly due to the fact that commercial penicillins, provided since the middle of 1944, have contained a higher proportion of penicillin of type K. Hence, the immediate problem is the preparation of a penicillin with the least possible proportion of the K factor. This will not be an easy task but surely not one beyond the skill of the mycologist.

The studies of the committee yielded important data on many other details of treatment procedure including the use of other drugs in concert with penicillin. The primary criterium used in this study<sup>3</sup> was the development of symptoms within a period of 11 months after treatment. The cumulative failures after eleven months ranged from 15 per cent with 2,400,000 units of penicillin to 62 per cent with 600,000 units. The addition of 320 mg. of arsenoxide to 300,000 units of penicillin halved the relapse rate and gave the same result (21 per cent) as the use of 1,200,000 units of penicillin alone. The addition of bismuth (0.6–1.0 gm.) to penicillin over a four month period similarly halved the relapse rate. The report contains many other findings which will materially help in determining the optimum treatment procedure and in estimating its effectiveness.

In the case of streptomycin there is a somewhat similar story of the need for the complementary functions of the imaginative pioneer and the critically evaluating team. The antibiotic discovered by Waksman proved to be destructive for the Gram-negative organisms, just the ones missed by penicillin. Bacteremias and urinary infections due to this group of bacteria, meningitis due to *Hemophilus influenzae* and tularemia are among the diseases which can be treated with this material (although the typhoid and salmonella organisms seem less susceptible).<sup>4</sup> Here, however, the possibility of using streptomycin for the treatment of tuberculosis offers by far the greatest field of application. It is this possibility, as it was the possibility of treating syphilis with penicillin, that has raised the production of these antibiotics to the rank of a multi-million dollar industry in a period of some three years.

Streptomycin is by no means so dramatic in its effects on tuberculosis as is penicillin in its influence on syphilis. It is clear however that the new drug exerts a slow but distinct suppressive influence upon the development of tuberculous infection; and it seems certain that it will provide an essential part of our armamentarium for dealing with that disease. In this case, we shall need more light on the purity of the drug itself, on its introduction into the body so as to reach specific infected tissues and on the possible development of drug-resistant strains of the tubercle bacillus. In particular, the toxic effects of streptomycin which are related to renal function and neurological reactions must be evaluated. McDermott of Cornell University reported at the Connecticut Clinical Congress in September preliminary studies which indicate that the hazards involved are not serious. All of these problems call for intensive study by organized coöperative research programs.

It is probable that—in the future as in the past—the development of new and creative concepts which constitute milestones on the path of knowledge will come from investigators, working by themselves in the light of their individual scientific imaginations. For the working out of techniques of application and the quantitative evaluation of results, the mass method of coöperative research is clearly indicated. The theory of the atomic bomb was evolved by individuals; the bomb itself was prepared by teams. The scientific organization of the future should keep both pathways open.

## REFERENCES

1. Moore, J. E., Mahoney, J. F., Schwartz, W., Sternberg, T., and Wood, W. B. The Treatment of Early Syphilis with Penicillin. *J.A.M.A.*, 126:65 (Sept. 9), 1944.
2. Committee on Medical Research, U. S. Public Health Service and the Food and Drug Administration. The Changing Character of Commercial Penicillin. *J.A.M.A.*, 131:271 (May 25), 1946.
3. Committee on Medical Research and the U. S. Public Health Service. The Treatment of Early Syphilis with Penicillin. *J.A.M.A.*, 131:265 (May 25), 1946.
4. Nichols, D. R., and Herrell, W. E. Streptomycin. *J.A.M.A.*, 132:200 (Sept. 28), 1946.

## CAN THE CLERGY AID THE HEALTH OFFICER IN THE UPBUILDING OF MENTAL HEALTH?

WHEN Lemuel Shattuck published his *Report of the Sanitary Commission of Massachusetts* in 1850, he addressed his closing appeal for support first to physicians, and second to clergymen. What he desired was primarily an appeal from the pulpit in "one or more discourses annually" for a general program of sanitary reform. This type of support may still be of notable value to the health officer. The recognition that mental and emotional problems are as important as "physical" problems in the evaluation of public health needs, however, opens areas of far deeper and wider coöperation between the physician and the pastor.

The commonest single factor in emotional maladjustment is probably a sense of inadequacy and a feeling of fear which results in inner conflict. The clergyman, who has to deal with such conflicts in his daily work as pastor must understand something of the fundamental principles of psychiatry if he is to perform his task wisely. On the other hand, the wise psychiatrist realizes that the resolution of such conflicts frequently demands sublimation of motive and desire into positive constructive channels; and that—in the case of many individuals—such a result can be accomplished through what may be broadly termed religious experience. Mrs. John Sherman Hoyt, a leader in this field, has reminded us that the word "sublimate" means "to raise, to elevate, to make sublime."

It was the recognition of this community of interest which led to the establishment by the Federal Council of the Churches of Christ in America of a Commission on Religion and Health, with membership coming from the various Protestant Churches, and including ministers, physicians, psychiatrists, public health experts, nurses, and laymen. This Commission has worked in close relationship with the National Committee for Mental Hygiene, and has been at all points guided by the best available technical knowledge in this field. Its work is of vital significance to the public health profession.<sup>1</sup>

During the war, the Commission, with the coöperation of the Y.M.C.A., organized short courses on "First Aid in Mental Health" for Army chaplains, U.S.O. and Y.M.C.A. workers, and clergymen in indirect contact with the troops. A large proportion of all the Protestant chaplains in the Army and Navy were exposed to these courses and it should be a great asset to our civilian mental hygiene program to have these thousands of clergymen returning to their community duties with an understanding of the basic principles of mental hygiene.

A second stage of the work of the Commission was the preparation of a series of pamphlets dealing with the adjustment of the returned service man to the conditions of civilian life. One of these pamphlets<sup>2</sup> contains an article by Dr. J. A. P. Millet, an excellent popular analysis of the obvious signs which may indicate good or bad adjustment and of attitudes the counsellor should take (and should not take) in regard to them. Another<sup>3</sup> presents a helpful program for the local church in dealing with the emotional problems of the returned serviceman.

The Commission has published valuable lists of further references in the field of personal counselling which should be of substantial value to many public health workers as well as to the clergy.

The mental hygiene problems raised by war service are in no sense unique. They differ—in essence—only in degree from the similar problems of daily civilian life. There is not a community in which the public health worker and the pastor could not engage in mutually fruitful cultivation of this field. Every public health nurse and every social worker would benefit by reading a 24 page leaflet on "The Ministry of Listening" by the Rev. Russell H. Dicks which is among the Commission's publications.

We commend the work of the Commission on Religion and Health to our readers. We should like to see a few health officers, who have the surplus energy to lift their minds from daily routine, do something concrete to make medicine and the churches in their communities effective partners. We suspect that a conference of local pastors called by the health officer to discuss this problem with the counsel of a competent specialist in mental hygiene might bear rich and substantial fruits.

#### REFERENCES

1. Commission on Religion and Health of the Federal Council of Churches of Christ in America. Rev. Seward Hiltner, Executive Secretary, 297 Fourth Ave., New York 10, N. Y. List of publications available free.
2. The Church and Returning Service Personnel. No. 3. "Counseling to Meet the Needs," by John A. P. Millet, M.D.
3. The Church and Returning Service Personnel. No. 6. "The Program of the Local Church."

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#### A.P.H.A. MEMBERSHIP DIRECTORY

The 1946 Membership Directory of the Association is at last a reality and every member is entitled to receive it without charge. Members who desire to receive a copy should send a post card or a letter to this effect to the Association office at 1790 Broadway, New York 19, N. Y.

## CONSTITUTION OF THE WORLD HEALTH ORGANIZATION

THE STATES parties to this Constitution declare, in conformity with the Charter of the United Nations, that the following principles are basic to the happiness, harmonious relations and security of all peoples:

Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.

The enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being without distinction of race, religion, political belief, economic or social condition.

The health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest coöperation of individuals and States.

The achievement of any State in the promotion and protection of health is of value to all.

Unequal development in different countries in the promotion of health and control of disease, especially communicable disease, is a common danger.

Healthy development of the child is of basic importance; the ability to live harmoniously in a changing total environment is essential to such development.

The extension to all peoples of the benefits of medical, psychological and related knowledge is essential to the fullest attainment of health.

Informed opinion and active coöperation on the part of the public are of the utmost importance in the improvement of the health of the people.

Governments have a responsibility for the health of their peoples which can be fulfilled only by the provision of adequate health and social measures.

ACCEPTING THESE PRINCIPLES, and for the purpose of coöperation among themselves and with others to promote and protect the health of all peoples, THE CONTRACTING PARTIES agree to the present Constitution and hereby establish the World Health Organization as a specialized agency of the United Nations within the terms of Article 57 of the Charter of the UN.

### CHAPTER I

#### OBJECTIVE

##### *Article 1*

The objective of the World Health Organization (hereinafter called the Organization)

shall be the attainment by all peoples of the highest possible level of health.

### CHAPTER II

#### FUNCTIONS

##### *Article 2*

In order to achieve its objective, the functions of the Organization shall be:

- (a) to act as the directing and coördinating authority on international health work;
- (b) to establish and maintain effective collaboration with the United Nations, specialized agencies, governmental health administrations, professional groups and such other organizations as may be deemed appropriate;
- (c) to assist governments, upon request, in strengthening health services;
- (d) to furnish appropriate technical assistance and, in emergencies, necessary aid upon the request or acceptance of governments;
- (e) to provide or assist in providing, upon the request of the United Nations, health services and facilities to special groups, such as the peoples of trust territories;
- (f) to establish and maintain such administrative and technical services as may be required, including epidemiological and statistical services;
- (g) to stimulate and advance work to eradicate epidemic, endemic and other diseases;
- (h) to promote, in coöperation with other specialized agencies where necessary, the prevention of accidental injuries;
- (i) to promote, in coöperation with other specialized agencies where necessary, the improvement of nutrition, housing, sanitation, recreation, economic or working conditions and other aspects of environmental hygiene;
- (j) to promote coöperation among scientific and professional groups which contribute to the advancement of health;
- (k) to propose conventions, agreements and regulations, and make recommendations with respect to international health matters and to perform such duties as may be assigned thereby to the Organization and are consistent with its objective;
- (l) to promote maternal and child health and welfare and to foster the ability to live harmoniously in a changing total environment;



- (m) to foster activities in the field of mental health, especially those affecting the harmony of human relations;
- (n) to promote and conduct research in the field of health;
- (o) to promote improved standards of teaching and training in the health, medical and related professions;
- (p) to study and report on, in coöperation with other specialized agencies where necessary, administrative and social techniques affecting public health and medical care from preventive and curative points of view, including hospital services and social security;
- (q) to provide information, counsel and assistance in the field of health;
- (r) to assist in developing an informed public opinion among all peoples on matters of health;
- (s) to establish and revise as necessary international nomenclatures of diseases, of causes of death and of public health practices;
- (t) to standardize diagnostic procedures as necessary;
- (u) to develop, establish and promote international standards with respect to food, biological, pharmaceutical and similar products;
- (v) generally to take all necessary action to attain the objective of the Organization.

### CHAPTER III

#### MEMBERSHIP AND ASSOCIATE MEMBERSHIP

##### *Article 3*

Membership in the Organization shall be open to all States.

##### *Article 4*

Members of the United Nations may become Members of the Organization by signing or otherwise accepting this Constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes.

##### *Article 5*

The States whose governments have been invited to send observers to the International Health Conference held in New York, 1946, may become Members by signing or otherwise accepting this Constitution in accordance with the provisions of Chapter XIX and in accordance with their constitutional processes provided that such signature or acceptance shall be completed before the first session of the Health Assembly.

##### *Article 6*

Subject to the conditions of any agreement between the United Nations and the Organization, approved pursuant to Chapter XVI, States which do not become Members in accordance with Articles 4 and 5 may apply to become Members and shall be admitted as Members when their application has been approved by a simple majority vote of the Health Assembly.

##### *Article 7*

If a Member fails to meet its financial obligations to the Organization or in other exceptional circumstances the Health Assembly may, on such conditions as it thinks proper, suspend the voting privileges and services to which a Member is entitled. The Health Assembly shall have the authority to restore such voting privileges and services.

##### *Article 8*

Territories or groups of territories which are not responsible for the conduct of their international relations may be admitted as Associate Members by the Health Assembly upon application made on behalf of such territory or group of territories by the Member or other authority having responsibility for their international relations. Representatives of Associate Members to the Health Assembly should be qualified by their technical competence in the field of health and should be chosen from the native population. The nature and extent of the rights and obligations of Associate Members shall be determined by the Health Assembly.

### CHAPTER IV

#### ORGANS

##### *Article 9*

The work of the organization shall be carried out by:

- (a) The World Health Assembly (herein called the Health Assembly);
- (b) The Executive Board (hereinafter called the Board);
- (c) The Secretariat.

### CHAPTER V

#### THE WORLD HEALTH ASSEMBLY

##### *Article 10*

The Health Assembly shall be composed of delegates representing Members.

##### *Article 11*

Each Member shall be represented by not more than three delegates, one of whom shall

be designated by the Member as chief delegate. These delegates should be chosen from among persons most qualified by their technical competence in the field of health, preferably representing the national health administration of the Member.

#### Article 12

Alternates and advisers may accompany delegates.

#### Article 13

The Health Assembly shall meet in regular annual session and in such special sessions as may be necessary. Special sessions shall be convened at the request of the Board or of a majority of the Members.

#### Article 14

The Health Assembly, at each annual session, shall select the country or region in which the next annual session shall be held, the Board subsequently fixing the place. The Board shall determine the place where a special session shall be held.

#### Article 15

The Board, after consultation with the Secretary-General of the United Nations, shall determine the date of each annual and special session.

#### Article 16

The Health Assembly shall elect its President and other officers at the beginning of each annual session. They shall hold office until their successors are elected.

#### Article 17

The Health Assembly shall adopt its own rules of procedure.

#### Article 18

The functions of the Health Assembly shall be:

- (a) to determine the policies of the Organization;
- (b) to name the Members entitled to designate a person to serve on the Board;
- (c) to appoint the Director-General;
- (d) to review and approve reports and activities of the Board and of the Director-General and to instruct the Board in regard to matters upon which action, study, investigation or report may be considered desirable;
- (e) to establish such committees as may be considered necessary for the work of the Organization;

- (f) to supervise the financial policies of the Organization and to review and approve the budget;
- (g) to instruct the Board and the Director-General to bring to the attention of Members and of international organizations, governmental or non-governmental, any matter with regard to health which the Health Assembly may consider appropriate;
- (h) to invite any organization, international or national, governmental or non-governmental, which has responsibilities related to those of the Organization, to appoint representatives to participate, without right of vote, in its meetings or in those of the committees and conferences convened under its authority, on conditions prescribed by the Health Assembly; but in the case of national organizations, invitations shall be issued only with the consent of the government concerned;
- (i) to consider recommendations bearing on health made by the General Assembly, the Economic and Social Council, the Security Council or Trusteeship Council of the United Nations, and to report to them on the steps taken by the Organization to give effect to such recommendations;
- (j) to report to the Economic and Social Council in accordance with any agreement between the Organization and the United Nations;
- (k) to promote and conduct research in the field of health by the personnel of the Organization, by the establishment of its own institutions or by coöperation with official or non-official institutions of any Member with the consent of its government;
- (l) to establish such other institutions as it may consider desirable;
- (m) to take any other appropriate action to further the objective of the Organization.

#### Article 19

The Health Assembly shall have authority to adopt conventions or agreements with respect to any matter within the competence of the Organization. A two-thirds vote of the Health Assembly shall be required for the adoption of such conventions or agreements which shall come into force for each Member when accepted by it in accordance with its constitutional processes.

#### Article 20

Each Member undertakes that it will, within eighteen months after the adoption by

the Health Assembly of a convention or agreement, take action relative to the acceptance of such convention or agreement. Each Member shall notify the Director-General of the action taken and if it does not accept such convention or agreement within the time limit, it will furnish a statement of the reasons for non-acceptance. In case of acceptance, each Member agrees to make an annual report to the Director-General in accordance with Chapter XIV.

#### Article 21

The Health Assembly shall have authority to adopt regulations concerning:

- (a) sanitary and quarantine requirements and other procedures designed to prevent the international spread of disease;
- (b) nomenclatures with respect to diseases, causes of death and public health practices;
- (c) standards with respect to diagnostic procedures for international use;
- (d) standards with respect to the safety, purity and potency of biological, pharmaceutical and similar products moving in international commerce;
- (e) advertising and labelling of biological, pharmaceutical and similar products moving in international commerce.

#### Article 22

Such Regulations adopted pursuant to Article 21 shall come into force for all Members after due notice has been given of their adoption by the Health Assembly except for such Members as may notify the Director-General of rejection or reservations within the period stated in the notice.

#### Article 23

The Health Assembly shall have authority to make recommendations to Members with respect to any matter within the competence of the Organization.

### CHAPTER VI

#### THE EXECUTIVE BOARD

#### Article 24

The Board shall consist of eighteen persons designated by as many Members. The Health Assembly, taking into account an equitable geographical distribution, shall elect the Members entitled to designate a person to serve on the Board. Each of these Members should appoint to the Board a person technically

qualified in the field of health, who may be accompanied by alternates and advisers.

#### Article 25

The Members shall be elected for three years and may be re-elected; provided that of the Members elected at the first session of the Health Assembly, the terms of six Members shall be for one year and the terms of six Members shall be for two years, as determined by lot.

#### Article 26

The Board shall meet at least twice a year and shall determine the place of each meeting.

#### Article 27

The Board shall elect its Chairman from among its members and shall adopt its rules of procedure.

#### Article 28

The functions of the Board shall be:

- (a) to give effect to the decisions and policies of the Health Assembly;
- (b) to act as the executive organ of the Health Assembly;
- (c) to perform any other functions entrusted to it by the Health Assembly;
- (d) to advise the Health Assembly on questions referred to it by that body and on matters assigned to the Organization by conventions, agreements and regulations;
- (e) to submit advice or proposals to the Health Assembly on its own initiative;
- (f) to prepare the agenda of meetings of the Health Assembly;
- (g) to submit to the Health Assembly for consideration and approval a general programme of work covering a specific period;
- (h) to study all questions within its competence;
- (i) to take emergency measures within the functions and financial resources of the Organization to deal with events requiring immediate action. In particular it may authorize the Director-General to take the necessary steps to combat epidemics, to participate in the organization of health relief to victims of a calamity and to undertake studies and research the urgency of which has been drawn to the attention of the Board by any Member or by the Director-General.

#### Article 29

The Board shall exercise on behalf of the whole Health Assembly the powers delegated to it by that body.

## CHAPTER VII

## THE SECRETARIAT

*Article 30*

The Secretariat shall comprise the Director-General and such technical and administrative staff as the Organization may require.

*Article 31*

The Director-General shall be appointed by the Health Assembly on the nomination of the Board on such terms as the Health Assembly may determine. The Director-General, subject to the authority of the Board, shall be the chief technical and administrative officer of the Organization.

*Article 32*

The Director-General shall be ex-officio Secretary of the Health Assembly, of the Board, of all commissions and committees of the Organization and of conferences convened by it. He may delegate these functions.

*Article 33*

The Director-General or his representative may establish a procedure by agreement with Members, permitting him, for the purpose of discharging his duties, to have direct access to their various departments, especially to their health administrations and to national health organizations, governmental or non-governmental. He may also establish direct relations with international organizations whose activities come within the competence of the Organization. He shall keep Regional Offices informed on all matters involving their respective areas.

*Article 34*

The Director-General shall prepare and submit annually to the Board the financial statements and budget estimates of the Organization.

*Article 35*

The Director-General shall appoint the staff of the Secretariat in accordance with staff regulations established by the Health Assembly. The paramount consideration in the employment of the staff shall be to assure that the efficiency, integrity and internationally representative character of the Secretariat shall be maintained at the highest level. Due regard shall be paid also to the importance of recruiting the staff on as wide a geographical basis as possible.

*Article 36*

The conditions of service of the staff of the Organization shall conform as far as possible

with those of other United Nations organizations.

*Article 37*

In the performance of their duties the Director-General and the staff shall not seek or receive instructions from any government or from any authority external to the Organization. They shall refrain from any action which might reflect on their position as international officers. Each Member of the Organization on its part undertakes to respect the exclusively international character of the Director-General and the staff and not to seek to influence them.

## CHAPTER VIII

## COMMITTEES

*Article 38*

The Board shall establish such committees as the Health Assembly may direct and, on its own initiative or on the proposal of the Director-General, may establish any other committees considered desirable to serve any purpose within the competence of the Organization.

*Article 39*

The Board, from time to time and in any event annually, shall review the necessity for continuing each committee.

*Article 40*

The Board may provide for the creation of or the participation by the Organization in joint or mixed committees with other organizations and for the representation of the Organization in committees established by such other organizations.

## CHAPTER IX

## CONFERENCES

*Article 41*

The Health Assembly or the Board may convene local, general, technical or other special conferences to consider any matter within the competence of the Organization and may provide for the representation at such conferences of international organizations and, with the consent of the government concerned, of national organizations, governmental or non-governmental. The manner of such representation shall be determined by the Health Assembly or the Board.

*Article 42*

The Board may provide for representation of the Organization at conferences in which the Board considers that the Organization has an interest.

## CHAPTER X

## HEADQUARTERS

*Article 43*

The location of the headquarters of the Organization shall be determined by the Health Assembly after consultation with the United Nations.

## CHAPTER XI

## REGIONAL ARRANGEMENTS

*Article 44*

- (a) The Health Assembly shall from time to time define the geographical areas in which it is desirable to establish a regional organization.
- (b) The Health Assembly may, with the consent of a majority of the Members situated within each area so defined, establish a regional organization to meet the special needs of such area. There shall not be more than one regional organization in each region.

*Article 45*

Each regional organization shall be an integral part of the Organization in accordance with this Constitution.

*Article 46*

Each regional organization shall consist of a Regional Committee and a Regional Office.

*Article 47*

Regional Committees shall be composed of representatives of the Member States and Associate Members in the region concerned. Territories or groups of territories within the region, which are not responsible for the conduct of their international relations and which are not Associate Members, shall have the right to be represented and to participate in Regional Committees. The nature and extent of the rights and obligations of these territories or groups of territories in Regional Committees shall be determined by the Health Assembly in consultation with the Member or other authority having responsibility for the international relations of these territories and with the Member States in the region.

*Article 48*

Regional Committees shall meet as often as necessary and shall determine the place of each meeting.

*Article 49*

Regional Committees shall adopt their own rules of procedure.

*Article 50*

The functions of the Regional Committee shall be:

- (a) to formulate policies governing matters of an exclusively regional character;
- (b) to supervise the activities of the Regional Office;
- (c) to suggest to the Regional office the calling of technical conferences and such additional work or investigation in health matters as in the opinion of the Regional Committee would promote the objective of the Organization within the area.
- (d) to cooperate with the respective regional committees of the United Nations and with those of other specialized agencies and with other regional international organizations having interests in common with the organization;
- (e) to tender advice, through the Director-General, to the Organization on international health matters which have wider than regional significance;
- (f) to recommend additional regional appropriations by the governments of the respective regions if the proportion of the central budget of the Organization allotted to that region is insufficient for the carrying out of the regional functions;
- (g) such other functions as may be delegated to the Regional Committee by the Health Assembly, the Board or the Director-General.

*Article 51*

Subject to the general authority of the Director-General of the Organization, the Regional Office shall be the administrative organ of the Regional Committee. It shall, in addition, carry out within the region, the decisions of the Health Assembly and of the Board.

*Article 52*

The head of the Regional Office shall be the Regional Director appointed by the Board in agreement with the Regional Committee.

*Article 53*

The staff of the Regional Office shall be appointed in a manner to be determined by agreement between the Director-General and the Regional Director.

*Article 54*

The Pan-American sanitary organization represented by the Pan-American Sanitary Bureau and the Pan-American Sanitary Conferences, and all other inter-governmental regional health organizations in existence prior

to the date of signature of this Constitution, shall in due course be integrated with the Organization. This integration shall be effected as soon as practicable through common action based on mutual consent of the competent authorities expressed through the organizations concerned.

## CHAPTER XII

### BUDGETS AND EXPENSES

#### *Article 55*

The Director-General shall prepare and submit to the Board the annual budget estimates of the Organization. The Board shall consider and submit to the Health Assembly such budget estimates, together with any recommendations the Board may deem advisable.

#### *Article 56*

Subject to any agreement between the Organization and the United Nations, the Health Assembly shall review and approve the budget estimates and shall apportion the expenses among the Members in accordance with a scale to be fixed by the Health Assembly.

#### *Article 57*

The Health Assembly or the Board acting on behalf of the Health Assembly may accept and administer gifts and bequests made to the Organization provided that the conditions attached to such gifts or bequests are acceptable to the Health Assembly or the Board and are consistent with the objective and policies of the Organization.

#### *Article 58*

A special fund to be used at the discretion of the Board shall be established to meet emergencies and unforeseen contingencies.

## CHAPTER XIII

### VOTING

#### *Article 59*

Each Member shall have one vote in the Health Assembly.

#### *Article 60*

(a) Decisions of the Health Assembly on important questions shall be made by a two-thirds majority of the Members present and voting. These questions shall include: the adoption of conventions or agreements the approval of agreements bringing the Organization into relation with the United Nations and inter-governmental organizations and agencies in accordance with Articles 69, 70, and 72; amendments to this Constitution.

(b) Decisions on other questions, including the determination of additional categories of questions to be decided by a two-thirds majority, shall be made by a majority of the Members present and voting.

(c) Voting on analogous matters in the Board and in committees of the Organization shall be made in accordance with paragraphs (a) and (b) of this Article.

## ARTICLE XIV

### REPORTS SUBMITTED BY STATES

#### *Article 61*

Each Member shall report annually to the Organization on the action taken and progress achieved in improving the health of its people.

#### *Article 62*

Each Member shall report annually on the action taken with respect to recommendations made by it by the Organization and with respect to conventions, agreements and regulations.

#### *Article 63*

Each Member shall communicate promptly to the Organization important laws, regulations, official reports and statistics pertaining to health which have been published in the State concerned.

#### *Article 64*

Each Member shall provide statistical and epidemiological reports in a manner to be determined by the Health Assembly.

#### *Article 65*

Each Member shall transmit upon the request of the Board such additional information pertaining to health as may be practicable.

## CHAPTER XV

### LEGAL CAPACITIES, PRIVILEGES AND IMMUNITIES

#### *Article 66*

The Organization shall enjoy in the territory of each Member such legal capacity as may be necessary for the fulfilment of its objective and for the exercise of its functions.

#### *Article 67*

(a) The Organization shall enjoy in the territory of each Member such privileges and immunities as may be necessary for the fulfilment of its objective and for the exercise of its functions.

- (h) Representatives of Members, persons designated to serve on the Board and technical and administrative personnel of the Organization shall similarly enjoy such privileges and immunities as are necessary for the independent exercise of their functions in connection with the Organization.

#### *Article 68*

Such legal capacity, privileges and immunities shall be defined in a separate agreement to be prepared by the Organization in consultation with the Secretary-General of the United Nations and concluded between the Members.

### CHAPTER XVI

#### RELATIONS WITH OTHER ORGANIZATIONS

#### *Article 69*

The Organization shall be brought into relation with the United Nations as one of the specialized agencies referred to in Article 57 of the Charter of the United Nations. The agreement or agreements bringing the Organization into relation with the United Nations shall be subject to approval by a two-thirds vote of the Health Assembly.

#### *Article 70*

The Organization shall establish effective relations and cooperate closely with such other intergovernmental organizations as may be desirable. Any formal agreement entered into with such organizations shall be subject to approval by a two-thirds vote of the Health Assembly.

#### *Article 71*

The Organization may, on matters within its competence, make suitable arrangements for consultation and cooperation with non-governmental international organizations and, with the consent of the government concerned, with national organizations, governmental or non-governmental.

#### *Article 72*

Subject to the approval by a two-thirds vote of the Health Assembly, the Organization may take over from any other international organization or agency whose purpose and activities lie within the field of competence of the Organization such functions, resources and obligations as may be conferred upon the Organization by international agreement or by mutually acceptable arrangements entered into between the competent authorities of the respective organizations.

### CHAPTER XVII

#### AMENDMENTS

#### *Article 73*

Texts of proposed amendments to this Constitution shall be communicated by the Director-General to Members at least six months in advance of their consideration by the Health Assembly. Amendments shall come into force for all Members when adopted by a two-thirds vote of the Health Assembly and accepted by two-thirds of the Members in accordance with their respective constitutional processes.

### CHAPTER XVIII

#### INTERPRETATION

#### *Article 74*

The Chinese, English, French, Russian and Spanish texts of this Constitution shall be regarded as equally authentic.

#### *Article 75*

Any question or dispute concerning the interpretation or application of this Constitution which is not settled by negotiation or by the Health Assembly shall be referred to the International Court of Justice in conformity with the Statute of the Court, unless the parties concerned agree on another mode of settlement.

#### *Article 76*

Upon authorization by the General Assembly of the United Nations or upon authorization in accordance with any agreement between the Organization and the United Nations, the Organization may request the International Court of Justice for an advisory opinion on any legal question arising within the competence of the Organization.

#### *Article 77*

The Director-General may appear before the Court on behalf of the Organization in connection with any proceedings arising out of any such request for an advisory opinion. He shall make arrangements for the presentation of the case before the Court including arrangements for the argument of different views on the question.

### CHAPTER XIX

#### ENTRY INTO FORCE

#### *Article 78*

Subject to the provisions of Chapter III, this Constitution shall remain open to all States for signature or acceptance.

*Article 79*

- (a) States may become parties to this Constitution by
- (i) signature without reservation as to approval;
  - (ii) signature subject to approval followed by acceptance; or
  - (iii) acceptance.
- (b) Acceptance shall be affected by the deposit of a formal instrument with the Secretary-General of the United Nations.

*Article 80*

This Constitution shall come into force when twenty-six Members of the United Nations have become parties to it in accordance with the provisions of Article 79.

*Article 81*

In accordance with Article 102 of the Charter of the United Nations, the Secretary-General of the United Nations will register this Constitution when it has been signed without reservation as to approval on behalf

of one State or upon deposit of the first instrument of acceptance.

*Article 82*

The Secretary-General of the United Nations will inform States parties to this Constitution of the date when it has come into force. He will also inform them of the dates when other States have become parties to this Constitution.

IN FAITH WHEREOF the undersigned representatives having been duly authorized for that purpose, sign this Constitution.

Done in the City of New York this twenty-second day of July, 1946, in a single copy in the Chinese, English, French, Russian and Spanish languages, each text being equally authentic. The original texts shall be deposited in the archives of the United Nations. The Secretary-General of the United Nations will send certified copies to each of the Governments represented at the Conference.



## Credit Lines

### UNRRA LOCATES KIDNAPPED CHILDREN

"The UNRRA headquarters at Arolsen, Germany, announced on June 2 that UNRRA had found 10,000 children kidnapped by Nazi "Pied Pipers" from countries overrun by the German war machine and carried off to Germany.

"In January, 1946, the first UNRRA child-search team went to work in the Regensburg area, an area rich in rumors and clues. By March this three-man team had located nearly 1,000 children, and the importance of child searching had been established. Today six teams are in the field, operating in the American, British, and French Zones, each having up to 15 members and speaking as many as 27 languages."

Thus, the July, 1946, *Monthly UNRRA Review* (1344 Connecticut Avenue, Washington 25, D. C.) begins its thrilling story of the restoration of thousands of kidnapped (literally) European children to their countries and, if possible, their homes.

This *Monthly Review* is a veritable storehouse of information on what the worlds across the two oceans are like and all the diverse activities that are a part of healing the most critical wounds of the six year 2nd World War. Its August issue is a two year review of the work of UNRRA, included in which is a country-by-country report of the work of the Health Division.

If you can stand more about the child's world of today over a large segment of the earth, get the July *The Child*, of the U. S. Children's Bureau (Washington 25, D. C.). Devoted to Europe's displaced children, this issue sketches the manifold endeavors that are going into the reconstruction of child life in Europe. Perhaps you will

have the grace to blush as you read what other countries are doing—Switzerland, for example, which is feeding the numerical counterpart of its own child population, 1,000,000, for a 6 week period with food exported from Switzerland. In addition 80,000 children from the countries of Europe have been invited for 3 month stays in Swiss families since the end of hostilities in 1945. But read all of it for yourself.

### DIGEST OF DDT LITERATURE

The Department of Agriculture is continuing its digest of the literature on DDT. A second digest, covering the period May 1 to December 31, 1944, became available in May. This digest is a valuable addition to the recent article and editorial, "Present Position of DDT in the Control of Insects of Medical Importance," by Fred C. Bishopp, Ph.D., and "Taking Stock of DDT" respectively, appearing in the June, 1946, issue of the *A.J.P.H.* Available from the Division of Insecticide Investigations, Bureau of Entomology and Plant Quarantine, Department of Agriculture, Washington, D. C.

### MARGARINE VS. BUTTER

In view of butter's current antics on the aerial trapeze, the butter colored pamphlet *Science, Margarine, Nutrition* has unusual timeliness. Prepared by Lawrence C. Salter and Associates, Consultants for Science (Munsey Building, Washington 4) it summarizes what nutritionists have long been teaching—that margarine has no nutritional disadvantage in relation to butter and further that it may actually be a better table fat than butter. The pamphlet includes a good brief bibliography.

There is also an analysis of the restrictive laws and taxes on the sale of margarine—restrictions that it suggests need reexamination in the light of current knowledge and current food problems.

#### ATOMIC BOMBS—AN AID TO PUBLIC HEALTH

"New horizons of medical and biological research were opened when the Manhattan Engineering District, key organization in the development of the atomic bomb, delivered the first radioactive isotopes to the nation's research institutions,"—so comments the writer of *News Notes*, Office of The Surgeon General, U. S. Army, in the August 15, 1946, release.

Barnard Free Skin and Cancer Hospital of St. Louis received the first unit—a millicurie for study of the processes by which cancer is produced. The total cost to the hospital was about \$400.

Requests for radio elements thus far received cover wide fields of scientific interest. Included in the list are:

1. Mechanisms by which cancer is produced.
2. Mechanisms by which plants utilize sunlight and carbon dioxide.
3. Disfunction of the thyroid glands.
4. Growth and composition of teeth and bones.
5. Utilization of sugar in diabetes.
6. Utilization of all essential food components.
7. The turnover of iron in anemic conditions.
8. Absorption by plants of essential elements from soil.
9. Vulcanization and polymerization of rubber.
10. Problems associated with radioactive isotopes themselves.

#### GUIDE TO FOOD SERVICE

John Andrews, Sanitary Engineer (R), Division of Sanitary Engineering, and Frances T. Champion, Division of Public Health Methods, both of the

Office of The Surgeon General, U. S. Public Health Service, are to be congratulated for their *Guide to Safe Food Service*. This tentative edition was published in February, 1946. It contains just about all the information anyone contemplating a program of training for employees in food establishments might desire.

Not only is the preliminary "attack" given in a way of a discussion of individuals who should attend the courses, place for the courses, numbers to attend, records, stimulating human interest, but, in addition, programs for three sessions are provided. For each session quizzes have been prepared—two for the first session—four for the second session, and two for the third session.

Reference pages at the end of the manual should also be of great value.

#### PUBLIC HEALTH CAN BE MEASURED IN DOLLARS AND CENTS

"Chicago and Northern Illinois—A *Healthful* Place to Live," is the heading of an advertisement that covered more than a third of a page in the *New York Times* of September 2, 1946. "The notable contributions by the Chicago Board of Health, and those of the outlying communities, have attracted nation-wide attention," is a lead line. An infant death rate for 1945 of 29.6 per 1,000 live births, and a maternal death rate of 1.6 per 1,000 births in 1944 and 1945 are cited. Attention is called to the diphtheria control program and the low typhoid fever incidence and death rate. A safe and plentiful water supply and a "vast, modern" sewage disposal system are also presented as selling points.

The advertiser? Not the Health Department but the Territorial Information Department and the Commonwealth Edison Company, Western United Gas and Electric Company, Public Service Company of Northern

Illinois, and the Illinois Northern Utilities Company.

#### REPORT FROM SEATTLE—AND FROM ILLINOIS

For ten years Seattle's Ryther Child Center has been developing a service for emotionally disturbed children. This service grew out of the needs and from the resources at hand. It is being reported on in a series of Monographs made possible by a four year grant of \$50,000 by the Field Foundation, for training, research, and educational service. They are in response to a wide variety of questions about the service and its operation.

The second Monograph on Organization and Operation was released in June, 1946, an earlier one on the Historical Development of the Ryther Child Center having appeared in 1945. Other Monographs on Psychiatric Consultation in a Treatment Service, The Use of Authority in Therapeutic Practice, Building Structures for Treatment Institutions, and Histories of Individual Children are in prospect. Lillian J. Johnson is the Center's Executive Secretary, its address is 4416 Stoneway, Seattle 3.

Continuing the same subject, *Plans for an Institution for the Treatment of Emotionally Disturbed Children* has just been released by the Illinois Children's Home and Aid Society (Chicago). This sets up in terms of intake policy, treatment program, personnel, teaching and research, plant, location, budget and salary schedule, the plan of this organization for a treatment institution. The plan was developed after a survey of 8 existing institutions, among them the Ryther Child Center, under the leadership of a special planning committee. In addition to the study, a comprehensive bibliography on the subject has been prepared which will be separately published under the title, "Treatment of the Emotionally

Disturbed Child: A Selected Bibliography with Annotations." The study and the plan were made possible by a grant from the Field Foundation.

#### HEALTH EDUCATION—MANY FACETS IN ILLINOIS

The Illinois Department of Public Health (Springfield, Ill.) sends us a quartette of health education materials that show both immediate and long-range interests. *Happy Eating for Babies* in word and picture tells all about "the right food the right way the right time." It is especially suitable for the mother of a first baby. *Home Care of Communicable Diseases* and *Common Transmissible Skin Diseases of Children* continue the education of the parent.

But *What Does the Medical Profession Think about County Health Departments?* is the plum in the pudding. Prepared by the Illinois Statewide Public Health Committee, its four pages summarize the 1942 resolutions of the American Medical Association and subsequent editorial in its *Journal* in behalf of extending the services of local health departments throughout the United States. The approval by the Illinois Medical Society of the Searcy-Clabaugh Act (Illinois' permissive health unit law) is also summarized. This is a recognition that the success of public health endeavors depends in part upon the administrative framework within which they operate. It also forestalls the careless propagandist who says "Oh, but the doctors are against county health departments."

#### ON THE ROAD TO SAFE MILK

*A Short Chapter* in the important history of milk sanitation traces the history of the development of milk bottle caps and closures.

Beginning with the itinerant milkman who used to roam the city streets with a cart filled with 40 quart buckets

to the present-day type of protection offered by a cap and closure, the story is told with an appeal both to the mechanical gadget and the antiquarian minded. Should be of particular interest to school health educators.

Prepared by and available from one of the Association's 36 sustaining members, Sealright Co., Inc., Fulton, N. Y.

#### A NEW DRESS FOR INDUSTRIAL HYGIENE NEWS LETTER

With the July, 1946, issue (Vol. 6, No. 7) the *Industrial Hygiene News Letter* of the U. S. Public Health Service puts on the garb of maturity. It has graduated into a printed magazine with pleasing makeup and typography. It continues to be an interesting brief summary of happenings in the world of industrial hygiene. Industrial Hygiene Division, U. S. Public Health Service, Washington, D. C.

#### GRASSROOTS PLANNING

We told you about Blue Earth County's (Minn.) Council on Governmental Relations in February (p. 184). The second of these rural county studies sponsored by the Spelman Foundation in coöperation with the Council on Intergovernmental Relations and committees of the local community involved has now appeared. It is called "Adventure in Government Gearing in Henry County, Indiana." It represents a progress report of a demonstration "in better meshing of governmental gears and in the process enabling local government to regain and maintain a major rôle in solving the problems of our complex economy and government."

This is a bright and stimulating report. A Rube Goldberg type of cartoon poses the problems—gears and wheels and engines pulling in various ways, some manned and operating, some not, some operating outside the main machine—this is the confusing local governmental machine. But here

the solutions proposed are local, not state or federal. Available from Council on Intergovernmental Relations, New Castle, Ind.

The third county that is in process of a similar demonstration is Colquitt County, Georgia. On January 1, 1946, Santa Clara County, California, was approved by the Spelman Fund for a similar study. Their reports are worth watching for. They represent fundamental attempts to modernize rather than weaken local government.

#### SUMMER THOUGHTS ON MEDICAL CARE

In the August *Survey Graphic* (112 East 19th Street, New York) Michael Davis brings poetic prose and the historical traditions of the 150 year old Boston Dispensary to the service of understanding the implications respectively of the National Health Bill of 1946 and the Taft-Smith-Ball Bill. Dr. Davis, who it will be remembered is the chairman of the Committee on Research in Medical Economics, predicts that the two bills will be in competition in the 1947 Congress. Says he, "Senator Taft and his allies will push the national medical charity bill with all the weapons that political shrewdness and plenty of money can command. Against them, and behind an improved National Health Bill with broadened and bipartisan sponsorship, must rally democratically minded Senators and citizens of both political parties."

Read "A Hammock in the Sun" as an idyll of a New England summer and as a footnote to the history of charity in the United States, as well as for its more serious discussion of better medical care.

#### WORTH ACQUIRING

*TB Facts*—If every layman knew and followed what is contained in this 12 page pamphlet of the National Tuberculosis Association (1790 Broadway, New York 19) tuberculosis would

be both an unnecessary and an unknown disease. In brief and readable language it tells how extensive the disease is, where it hits, how it is found, what should be done for it, and the community measures necessary in case finding, relief, hospital and nursing care, health education, and community organization. Among its quotable sentences are, "The Christmas Seal is an immigrant that became a good American." "The basic unit for tuberculosis work is the local administrative unit, the county." "If our people wish to eradicate TB before the turn of this century, it is within their power to do so."

From the same source comes *Admission Chest X-ray Service*. This is a kit of materials aimed to aid hospitals in fitting chest x-ray of patients into the regular admission procedure. Prepared jointly by the American Hospital Association, the U. S. Public Health Service, and the National Tuberculosis Association, for hospitals and clinics, this has a variety of guidance and propaganda material as well as some suggested news releases. This is all a part of a forthcoming national anti-tuberculosis campaign to promote

routine chest x-raying of all hospital personnel and of patients on admission.

The Health Education Service of the New York Tuberculosis and Health Association (386 Fourth Avenue, New York 16) announces a series of health exhibits consisting of displays and related pamphlets, films and posters. The exhibits are available, but offered locally only without charge.

The June Connecticut *Health Bulletin* announces "Suggestions for Adequate Medical Service in Industry" prepared by the Bureau of Industrial Hygiene. It is useful in planning or appraising an industrial health program. Copies in mimeographed form are available without charge from the Bureau of Industrial Hygiene, Connecticut State Department of Health, 1179 Main Street, Hartford 1.

Credit lines has previously mentioned the Family Health Series of the New York Community Service Society (Feb., 1946, p. 185). The May, 1946, revision of No. 3 in the Guide for Public Health Nurses, *Tuberculosis*, is now available from Community Service Society, 122 East 22nd Street, New York 10 at 5¢, plus postage.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**The Common Sense Book of Baby and Child Care—***By Benjamin Spock, M.D. New York: Duell, Sloan & Pearce, 1946. 527 pp. Price, \$3.00.*

The number of volumes in print and available to the public on how to bring up a baby is legion. The poor mother who wants to learn about how her baby grows and what to do or not to do about it does not lack for many sources of advice. Her problem is rather to decide which book to select.

Now Dr. Benjamin Spock offers his own very personal advice for babies and children of all ages. The attitude expressed and the general tenor of the advice typify the present-day departure from rigidity in schedules and training. One can confidently predict that it will be a huge success with mothers, for Dr. Spock has succeeded to an amazing degree in striking a middle ground in his advice. He anticipates the objections that mothers may raise against advice which counsels freedom of action for the child, and is ready with sensible answers. A long experience in answering specific questions from parents contributes to his ability in carrying this off successfully. His style is so engaging and friendly that the book is unusually readable. The illustrations of Dorothea Fox are charming and very appropriate. All in all, the book may be most heartily recommended.

MYRON E. WEGMAN

**Greet the Man—***By Harold Wilke. Philadelphia: The Christian Education Press, 1945. 218 pp. Price, \$1.50.*

A penetrating insight into the thoughts and feelings of wounded

servicemen is presented by the author. His book, containing many suggestions as to how healthful personal relations with the war wounded may be established, is intended for two groups of readers: persons who will help others (ministers, chaplains, social workers, etc.) and persons who have a wounded man in their family circle.

The material included is based not only upon his experience as a parish minister, his experience in ministering to the sick and disabled, but also upon intensive study of his own feelings and responses as a handicapped person. The author records many personal experiences so that the principles of "meaningful personal relations" will be better understood.

LOUIS LONG

**Into the Freezer—and Out—***By Donald K. Tressler, Ph.D., Clifford F. Evers, B.S., and Lucy Long. New York: Avi Publishing Co., Inc., 1946. 223 pp. Price, \$2.50.*

This is an excellent practical guide to the proper freezing of foods. Much of the material presented is a digest of facts taken from the technical publication by Tressler and Evers, *The Freezing Preservation of Foods*, but now presented in a form that can be easily followed by the owner of a home freezer, a renter of space in a frozen food locker, or by the operator of a locker plant.

The authors point out the rapid expansion of the frozen food industry and the increasing popularity of frozen foods. From that point on, the book gives a step by step discussion of all phases involved in the correct freezing

of foods. Advice is given regarding the size freezer to buy, how to care for the freezer, the services a locker man can and does render, how best to use freezer space, and the merit nutritionally of using frozen foods.

Then follows a detailed discussion of points which must be carefully considered if the resulting frozen product is to be of high quality. In the case of fruits and vegetables, variety, maturity, speed from harvest to freezer, proper packaging, and correct holding temperature are all stressed as important.

A planting and harvesting guide is presented which gives information on the best varieties for freezing of all vegetables and fruits, and then explicit directions and instructions are given for the preparation of vegetables, fruits, juices, purées, meat, poultry, shellfish, dairy products, baked goods, pastries, and wild game meat and fish. Not only are instructions for freezing given but equally important are directions for the thawing, preparation, and cooking of foods after they come out of the freezer.

The book is illustrated and is a real storehouse of information on frozen foods.

H. S. ADAMS

*Medicine in Industry*—By *Bernhard J. Stern, Ph.D.* New York: *Commonwealth Fund*, 1946. 223 pp. Price, \$1.50.

*Medicine in Industry*, the fourth of twelve special studies prepared for the New York Academy of Medicine's Committee on Medicine and the Changing Order, is a valuable contribution to the rapidly growing literature on social medicine. Those concerned with public health and the administrative problems of medical care will find it a concise source of useful information.

As in an earlier monograph in the series, *American Medical Practice in the Perspectives of a Century*, Dr.

Stern's approach is that of a sociologist attempting to assay the contribution of medicine to the social order in which we live. The first chapters are devoted to a summary of the beneficial as well as the deleterious effects of mechanization and mass employment upon health, and to a review of the background and trends of social and legislative measures aimed to meet the constantly changing health and medical needs of members of our highly complex industrial civilization.

The author emphasizes, in the concluding chapters of the volume, the unmet challenges and the relatively unexplored opportunities for the application of preventive and rehabilitative measures in an industrial setting.

Some readers may believe that Dr. Stern has minimized the recent accomplishments of industrial medicine. This, I am sure, is not his intention; rather, it is to draw proper attention to the technological lag in utilizing available scientific knowledge in dealing with some of the pressing medical problems of the day

THOMAS D. DUBLIN

*Neurosis and the Mental Health Services*—By *C. P. Blacker, M.A., M.D., F.R.C.P.* New York: *Oxford University Press*, 1946. 218 pp. Price, \$5.00.

This volume by Dr. Blacker is the report of a survey of the Mental Health Facilities in England and Wales, begun in October, 1942, under the sponsorship of the Ministry of Health. The report and recommendations, however, are the personal opinions of Dr. Blacker. The survey was originally instituted to secure better coördination of existing services due to the exigencies of the war, but it was broadened so as to consider the post-war needs of the country.

The factual results of the survey are presented and interpreted. There are specific proposals for immediate and

for the future reorganization of the mental health services. Of particular interest are the proposed function of the medical schools in the development of the program, the integration of the mental in the general health service, and proposal of services which should be provided for a hypothetical population of a million as an administrative unit.

There are many similarities with the problems and needs for services which may be found in this country. The information and discussions contained in this report have great value for anyone concerned with the development of mental health facilities.

JAMES M. CUNNINGHAM

*Microbiology for Nurses — By Mary Elizabeth Morse, M.D., and Martin Frobisher, Jr., S.B., Sc.D. (7th ed.) Philadelphia: Saunders, 1946. 521 pp. 214 illus. Price, \$3.00.*

For twenty-seven years Morse and Frobisher's *Microbiology for Nurses*, known as "Bacteriology for Nurses" until 1941, has been a leading text in a field of ever-increasing importance to nursing education.

This 7th edition eliminates obsolete material and includes new methods and results of research that have been developed during the war. Among the new topics presented are: Penicillin, Influenza Vaccine, and the Electron Microscope, which makes visible particles never before scientifically considered. One chapter is devoted to Biological Transmission of Diseases by Insects, with special reference to malaria, about the control of which much was learned in World War II. Emphasis on public health and the social aspects of disease is a significant trend in this edition.

Instructors and students will appreciate the presentation of fundamental principles of microbiology and the in-

tegration of theory and practice to form a well organized, usable textbook on a subject of great scientific detail.

HELEN M. ROSER

*The Municipal Year Book—1946 —Edited by Clarence E. Ridley and Orin F. Nolting. Chicago: International City Managers Association, 1946. 593 pp. Price, \$8.50.*

The best description of this volume is taken from its foreword—"The chief purpose of this volume, as in past years, is to provide municipal officials with discussions of the current problems of cities throughout the country with facts and statistics on individual city activities and with analyses of trends by population groups."

The general content is the same as that for 1945 with data brought up-to-date. The personnel section contains new features dealing with hours of work, overtime pay, pensions, veterans' preference, and salaries of chief municipal officers. New data in the planning section give an analysis of works projects in the blueprint and specifications stage as of the beginning of 1946. More information on the economic base of metropolitan districts for each city of over 10,000 population is also a feature of this volume. Much more information concerning cities of the 5,000-10,000 population group will be found in this edition.

Unfortunately, the tabular data on city-county health units included in the 1945 volume is not continued in this one.

FRANCIS B. ELDER

*Qualitative Organic Microanalysis—By Frank Schneider, Ph.D. New York: Wiley, 1946. 218 pp. Price, \$3.50.*

The purpose of this book is to provide a guide to techniques and manipulations employed for the identification of organic compounds. The micro methods described entail the use of



relatively inexpensive equipment and thus they are suitable for courses designed to give training in these techniques.

A considerable portion of the text is devoted to general methods of purification of compounds so that tests of purity can be made. Elementary analysis for carbon, oxygen, nitrogen, sulfur, halogens, and phosphorus, and for water are briefly described. Methods for the determination of physical constants are detailed as well as for the determination of solubility.

The order of the tests used in this book is that of the Mulliken Huntress scheme. However, there is some correlation with the schemes of Kamm, and Shriner and Fuson through the solubility classification which is given. The tests for compounds of Order I comprising aldehydes, carbohydrates, acids, phenols, esters, acid anhydrides and lactones, ketones, alcohols, and hydrocarbons and ethers; and of compounds of Order II comprising compounds containing nitrogen in addition to carbon, hydrogen, and oxygen, are relatively thoroughly treated; but only brief treatment (4 pages) is given to compounds containing halogen or sulfur. Numerous line drawing illustrations of equipment are included. The book should serve the purpose for which it was designed.

MORRIS B. JACOBS

**Drainage for Health in the Caribbean Area**—By E. H. Magoon, M.S. Havana, Cuba: Compañia Editora de Libros Y Folletos, 1945. 556 pp.

Malaria as it is found in the Central American and Caribbean countries is the health factor considered. The text is in Spanish and English in parallel columns. Localities are studied individually. Although general topographical, meteorological, epidemiologically, and control measures are discussed, the central theme is control by

drainage. There are excellent chapters on mixing of concrete and the manufacture of drainage tile, slabs, inverts, etc. Stream flow measurement is also well presented.

There are good chapters on the construction and use of stable traps, of screening and use of bednets and of field surveying equipment. The sections that describe hand tools and mechanical equipment should be particularly valuable. The use of larvicides and of DDT or pyrethrum for the control of adult mosquitoes is not developed. Although there are copious illustrations — photographs, plans, sketches, etc. — they are all grouped in a section at the back of the book which makes reference to them irksome. Clarity of some sketches is lost in the effort to crowd too many views into the space available.

FRANCIS B. ELDER

**Out of Carnage (The Battle Against Death in War)**—By Alexander R. Griffin. New York: Howell, Soskin, 1946. 327 pp. Price, \$3.00.

*Out of Carnage* is a compilation apparently based on hearsay, news-drama, official reports and interviews with technically trained persons. It lacks cohesion—in fact skips with utter abandon from Army to Navy, to Surgery, to DDT, to body armor, to miscellaneous inventions and rescue techniques. Numerous technical errors are in evidence, though many of them are of minor importance. The text is largely couched in the pseudotechnical dramatic jargon now so popular with many lay writers on medical subjects. There are zooming ambulance planes, magic powders, and miracle ointments; the punctual appearance of great medical discoveries at the precise moment of destined need belies the searching toil and intellectual integrity of our scientists.

The author obviously has searched

diligently for source material and has held access to much technical data to come out of the war. It is indeed regrettable that he could not have taken more time to weave them into a studied and authentic history of the medical highlights of World War II.

TOM F. WHAYNE

**Diagnosis and Treatment of Pulmonary Tuberculosis**—By Moses J. Stone, M. D. and Paul Dufault, M. D. Philadelphia: Lea & Febiger, 1946. 325 pp. 93 illus. Price, \$3.50.

The authors of this small book, almost pocket sized, do not pretend to treat exhaustively any of the subjects discussed, and they introduce practically no material that has not been published elsewhere. The viewpoint expressed is modern.

The volume will be helpful to the general practitioner or medical student who wishes a ready-reference manual on generally accepted facts and diagnostic and therapeutic procedures relating to pulmonary tuberculosis. The specialist will wish to consult authors who deal more comprehensively with the subject.

JOHN H. KORNS

**Post-War Venereal Disease Control: Proceedings, National Conference, St. Louis, Missouri, November 1944; Supplement No. 20 to The Journal of Venereal Disease Information**—Washington: Federal Security Agency, U. S. Public Health Service. Gov. Ptg. Office, 1945. 213 pp. Price, \$35.

This report on the Third National Conference on Venereal Disease Control represents the combined thinking of international authorities in this field. It embraces all phases of venereal disease control, including administration, education, epidemiology, diagnosis and treatment, with particular reference to the application of knowledge gained during the war to

venereal disease control of the future.

The public health officer will find this volume very helpful in venereal disease control planning. The pros and cons for the various types of activities are brought out in the discussions, leading to ultimate agreement on the courses to be followed. Those who have lost contact with this field during the war will find the report invaluable in bringing them up to date on this subject. WILLIAM A. BRUMFIELD, JR.

**Topley and Wilson's Principles of Bacteriology and Immunity**—By G. S. Wilson, M.D., and A. A. Miles, M.A. (3rd ed.). Baltimore: Williams & Wilkins, 1946. 2 vol. 2054 pp., 44 pp. index, illus. Price, \$12.00.

Not only to bacteriologists but also to public health personnel in general Topley and Wilson's book is the standard compendium comparable to Rosenau's *Preventive Medicine and Hygiene*. The loss of Topley from participation aroused qualms in all of us. However, Wilson was uniquely fortunate in gaining as his new collaborator an old colleague, A. A. Miles. Inevitably, Topley's touch is still missed, but this third edition is another masterpiece quite in keeping with its predecessors.

The authors were confronted with a difficult decision. The one volume second edition was ungainly with over 1600 pages. If a reasonable one volume text was contemplated for the third edition, in order to encompass nine years of highly productive bacteriological developments, the jettison of classical basic material would have been necessary. Instead, the decision was to expand into two volumes of approximately 1000 pages each and produce an advanced text and reference book. Within the additional 400 pages the bibliography is almost doubled and is very complete through 1942 and surprisingly so into 1944. One notes that

cognizance is taken of Ravenel's criticism of the second edition. His contribution in clarifying the bovine source of human tuberculosis is now recognized.

With few exceptions the arrangement and presentation are similar to those of previous editions. The frequent helpful summaries have been continued. A new chapter on Chemotherapy has been included and an excellent chapter on Air Bacteriology has been substituted for that of Soil Bacteriology. Recognition of the genus *Shigella* and of the genus *Salmonella* has resulted in chapters for each. There have been revisions within the other chapters appropriate to advances in knowledge. The index, standard of printing, and freedom from errors are, as in the past, excellent. The illustrations have benefited by the inclusion of electron micrographs.

Omission of the mycoses other than actinomycosis will mean more to us in the United States where blastomycosis, coccidioidomycosis and histoplasmosis pose problems not only for the bacteriologist but also for the health officer and clinician. If progress in this field maintains its present pace, the next edition will be handicapped seriously if the important fungi are not included. Unfortunately, that would necessitate further expansion. In its present size one must question its practicability as a text for medical classes. However, for more advanced studies it will continue to be the standard and requisite.

CHARLES E. SMITH

**Annual Reports: How to Plan and Write Them—By Beatrice K. Tolleris.** New York: National Publicity Council, 1946. 39 pp. Price, \$1.00.

In a recent annual report of a municipal public health department appears this astonishing sentence: "Because of . . . the shortage of time due

to the pressure of *essential* activities, and the fact that annual reports are seldom read . . . there will be no detailed written summary of this Department's activities . . ." The able city health officer whose attitude toward a potentially influential health educational device is revealed in all its nakedness by that sentence should read *Annual Reports: How to Plan and How to Write Them*. And so should you.

And so should you, even though you have already learned that an annual report is not a statistical mausoleum in which the deceased felines removed from the public gaze, and other unsavory events are reduced to totals and laid to rest. And so should you read this brochure, even though you have, unaided, come to the conclusion that long lists of employees or stilted letters of transmittal to the Honorables of the Common Council do not constitute an inspired introduction to an account of the year's activities. Yes, so should you read it even though your annual report is a straightforward and sprightly recounting of the twelve month successes and failures. Your report may be pretty good, but it could be better. And this newest of the HOW-TO-DO-IT series will help you make it so.

You have an obligation—if you haven't an irresistible desire—to tell Mr. Nabob and Mrs. Cross Tracks what you have been doing with their money. How will you tell them? Strangely enough there are several ways. Have you canvassed them all? *Annual Reports* goes over the methods with you—with illustrative cases. You can't get away from statistics, being in the line of business you are engaged in. But there are ways and ways of putting statistics to work. *Annual Reports* goes into this matter in illuminating detail. Finally, it has some cogent words to say about the clothes this perennial accounting of your steward-

ship will wear. Do your sanitary inspectors start out on their public business clad in dungarees? Do your public health nurses wear slacks and sweaters on duty? Do these other messages, your annual reports, go about their illuminating task dressed in drab covers from which they peer suspiciously in bleary print, their eyes surrounded by antiquated, boxed borders? If they do, then Brother, you very badly need to ponder over the last pages of this HOW-TO-DO-IT! There you will find what the well dressed report should wear. And the price of all this help is only one dollar.

RAYMOND S. PATTERSON

**Industry, Tuberculosis, Silicosis, and Compensation**—*Edited by Leroy U. Gardner, M.D. New York: National Tuberculosis Association, 1945. 126 pp. Price, \$2.00.*

In this small volume are twelve current discussions covering certain phases of (1) pulmonary tuberculosis, and (2) pneumoconiosis as encountered in industry, with some consideration given to (3) legal compensation aspects of

such diseases. This is not a complete coverage of the subjects listed, nor a compendium thereof. Rather, it is a group of papers covering in part certain phases of the subjects.

Hilleboe and Gould give a good account of their experience with mass radiography, including such recent developments in the radiographic field as the Morgan phototimer. Reid's thoroughgoing account of the control of tuberculosis at the home office of the Metropolitan Life Insurance Company deserves study by all who are interesting in tracking down the presence of the tubercle bacillus in workers.

The section on pneumoconiosis, including silicosis, the effects of arc welding and value of aluminum therapy, is in itself worth the price of the book. Wright, Brahdy, and Kuechle have enunciated some principles relating to workmen's compensation coverage deserving of more general practice.

For those engaged in work related to these problems, this series of papers contains much valuable information, and should be a part of their reference library.

W. A. SAWYER

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**Document of State**—Preserved in the files of every health agency in the land should be a copy of the issue of Public Health Reports devoted to the recent international health conference and the World Health Organization now in course of construction.

**ANON.** The World Health Organization. Pub. Health Rep. 61, 35:1259 (Aug. 30), 1946.

**More Than the Digits Are Reversed**—In 1917 when the Bureau of Animal Industry began testing cattle for tuberculosis, 3.2 per cent were posi-

tive reactors. This year the percentage is 0.23. Through the years nearly 300 million cattle have been tested but the job is not yet done.

**ANON.** Control of Bovine Tuberculosis in the United States. Pub. Health Rep. 61, 36:1315 (Sept. 6), 1946.

**In English Day Nurseries**—This may be of only casual interest to you, but a made-in-Britain study reveals an unusually high incidence of respiratory infections among children (of working mothers) who were sheltered in wartime day nurseries. These infections con-

stitute a risk to health that calls for a careful weighing of the hazards and benefits of nurseries to the child and the community of children.

ANON. The Health of Children in War-time Day Nurseries. *Brit. M. J.* No. 4467: 217 (Aug. 17), 1946.

**Semi-Annual Tests Advocated—**"Pulmonary tuberculosis is the most serious medical problem that confronts the health departments of medical schools." So begins the summary of a twenty year survey of students at Harvard Medical. Not only students, but nurses and interns should have x-ray reexaminations at not greater than semi-annual intervals—is the final recommendation.

BREAM, H. P., and KANE, L. W. Pulmonary Tuberculosis in Harvard Medical Students. *New England J. Med.* 235, 10:316 (Sept. 5), 1946.

**"Something More Is Desperately Needed"**—In the first of his Harben Lectures, a Mayo Foundation researcher reviews the early and fruitless history of chemotherapeutic efforts to cure tuberculosis. He lays down some rules for effective scientific research and promises to tell in a following lecture about streptomycin.

FIELDMAN, W. H. The Chemotherapy of Tuberculosis. *J. Roy. Inst. Pub. Health & Hyg.* 9, 9:267 (Sept.), 1946.

**Has Another Idol Feet of Clay?**—Just as several million children enter school to face an army of teachers determined to condition them to use their handkerchiefs ("to stop the spread of colds and coughs") there appears a report asserting that more germs are spread by blowing the nose than by sneezing, coughing, or breathing. The handkerchief fails in four ways to live up to its reputation: germs are released after the handkerchief dries, germs are dispersed during the blow, they contaminate the blower's hands, and are then transferred to fomites.

HAMBURGER, M., JR., and GREEN, M. J. The Problem of the Dangerous Carrier of Hemolytic Streptococci. *J. Infect. Dis.* 79, 1:33 (July-Aug.), 1946.

**A Word of Caution**—If we utilize all our resources we can chest x-ray all adult Americans. Are we to condemn as tuberculous everyone whose film shows lesions characteristic of early tuberculosis? Suspicious film findings must be confirmed; otherwise harm will be done.

HILLEBOE, H. E. What Is Early Tuberculosis. *Pub. Health Rep.* 61, 36:1295 (Sept. 6), 1946.

**Now It Is Told**—So much publicity has been given the committee report on streptomycin that reference to that important document needs scarcely to be included here. But if you haven't looked it up, do. Streptomycin should be used against the Gram-negative bacilli. It is likely to prove valuable as a palliative against tuberculosis, when there is enough to go round.

KEEFER, C. S., *et al.* Streptomycin in the Treatment of Infections. *J.A.M.A.* 132, 1:11 (Sept. 7), 1946.

**All Too True**—Little can be achieved in the rehabilitation of the tuberculous, say these authors, without the coöperative effort of management and labor. Without rehabilitation, re-employment and after-care, most of the millions spent on case finding and medical care will be wasted. One barrier to reemployment is fear.

KILFER, N. C., and HILLEBOE, H. E. Rehabilitation of the Tuberculous in Industry. *J.A.M.A.* 132, 3:121 (Sept. 21), 1946.

**Caries in Parents and Their Children**—Findings of this study demonstrate strong familiar factors in susceptibility and resistance to dental caries. Detailed investigations of the genetic mechanisms involved are promised.

KLEIN, H. The Family and Dental Disease. *J. Am. Dent. A.* 33, 11:735 (June 1), 1946.

**Not for Rule-of-Thumbers**—There is so much that is repeatable in this paper that I have only with iron self-control limited myself to one quotation: "The only groups in American life who attain real professional status are those who work hard at it." Now you'll have to read the whole paper to find out the implications of this comment. You'll be well repaid for the reading.

KOOS, E. L. Our Changing Society and the Public Health Nurse. *Pub. Health Nurs.* 38, 9:479 (Sept.), 1946.

**Look Not on the Egg When It Is Raw**—Germs of pullorum disease of chickens are known to be present in eggs laid by sick hens, but it was thought that humans were immune. Now comes the report of an extensive outbreak of gastroenteritis thought to have been caused by eating a rice pudding containing insufficiently cooked eggs. What next?

MITCHELL, R. B., *et al.* An Outbreak of Gastroenteritis Presumably Caused by *Salmonella pullorum*. *J. Infec. Dis.* 79, 1:57 (July-Aug.), 1946.

**Adapting Facilities to Services**—Four patterns for health centers are presented. The discussion is concerned with structural designs to facilitate operating relationships among occupants. If you have any prospect whatever of enjoying the advantages of a health center you will need this.

MOUNTIN, J. W., and HOENACK, A. The Health Center. *Pub. Health Rep.* 61, 38: 1369 (Sept. 20), 1946.

**Laymen at Work**—An enthusiastic report on the local dental health programs stimulated and supported by the New Jersey State Health Department's Division of Dental Health—but not

bossed by that agency. Local autonomy, wide participation, balance of lay and professional influences; these are some of the characteristics.

NYSWANDER, D. B. New Jersey Citizens Know What They Want. *Dental Health.* 6, 3:15 (Aug.), 1946.

**It's Inexpensive and School-Day Saving**—An epidemic of ringworm of the scalp was controlled in one year without barring infected children from school and by means of topical applications. This will be good news to those who are faced with this miserable infection and are unable to obtain the usually recommended x-ray apparatus.

SCHWARTZ, L., *et al.* Control of Ringworm of the Scalp among School Children. *J.A.M.A.* 132, 2:58 (Sept. 14), 1946.

**Conservation of the Family**—How the American Vigilance Association, the New York Society for Sanitary and Moral Prophylaxis, the Pennsylvania Society for Prevention of Social Diseases, the American Purity Alliance, and a lot of other associations with dreadful names combined to form the A.S.H.A., and what the combination of agencies has been doing since is a useful historical document. Future opportunities and plans are included.

SNOW, W. F. The American Social Hygiene Association. *J. Soc. Hyg.* 32, 6:241 (June), 1946.

**Transcutaneous Tuberculosis Vaccination**—BCG gets a boost in Britain. The voluntary tuberculosis agencies ask the Minister of Health "to make BCG available for trial in this country." The memorandum accompanying the request goes thoroughly into all the pros and cons of the problem.

TYTLER, W. H. Memorandum on BCG. *M. Officer.* 76, 9:95 (Aug. 31), 1946.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

- APPLICATIONS OF GERMICIDAL, ERYTHEMAL AND INFRARED ENERGY. By Mathew Luckiesh, D.Sc., D.E. New York: D. Van Nostrand, 1946. 463 pp. Price, \$5.50.
- BODY MECHANICS IN NURSING ARTS. By Bernice Fash. New York: McGraw-Hill, 1946. 130 pp.
- HEALTH-HAPPINESS-SUCCESS SERIES (BUILDERS FOR GOOD HEALTH, GOOD HEALTH IS FUN, HEALTH FOR YOUNG AMERICANS, WORKING TOGETHER FOR HEALTH, YOUR HEALTH AND HAPPINESS). By William E. Burkard, Raymond L. Chambers and Frederick W. Maroney. New York: Lyons and Carnahan, 1946. 375 pp. Price, \$1.00 each.
- THE CONTROL OF VENEREAL DISEASE. By R. A. Vonderlehr, M.D., and J. R. Heller, Jr., M.D. New York: Reynal & Hitchcock, 1946. 245 pp. Price, \$2.75.
- DENTISTRY—AN AGENCY OF HEALTH SERVICE. By Malcolm Wallace Carr. New York: The Commonwealth Fund, 1946. 219 pp. Price, \$1.50.
- FREE MEDICAL CARE. By Clarence A. Peters. New York: H. W. Wilson Company, 1946. 378 pp. Price, \$1.25.
- HEARINGS BEFORE THE COMMITTEE ON EDUCATION AND LABOR—S. 1318. Maternal and Child Welfare. Washington: Gov. Ptg. Office, 1946. 391 pp.
- IT'S AN ALLEY. By Frank G. Crandall, Jr., M.D. Hollywood: Murray & Gee, Inc., 1946. 113 pp. Price, \$3.50.
- MILK MARKETING UNDER FEDERAL CONTROL. By Carl McFarland. New York: Milk Industry Foundation, 1946. 205 pp. Price, \$7.50.
- THE NUTRITION FOUNDATION, INC. (REPORT OF SCIENTIFIC DIRECTOR). By Charles Glenn King, M.D. New York: The Nutrition Foundation, 1946. 81 pp.
- PENICILLIN—ITS PRACTICAL APPLICATION. By Sir Alexander Fleming. Philadelphia: Blakiston, 1946. 380 pp. Price, \$7.00.
- PRACTICAL MALARIOLOGY. By Paul F. Russell, et al. Philadelphia: Saunders, 1946. 684 pp. Price, \$8.00.
- SYMPOSIUM ON "PRESENT DAY SOCIAL AND ECONOMIC ASPECTS OF NATIONAL HEALTH" AND "UNESCO AND AMERICAN PARTICIPATION IN ITS ACTIVITIES." (Proceedings of the American Philosophical Society) Vol. 90, No. 4. The American Philosophical Society. Philadelphia: The American Philosophical Society, 1946. 317 pp.
- PROFESSIONAL ADJUSTMENTS I. By Alice L. Price, B.S., R.N. Philadelphia: Saunders, 1946. 212 pp.
- PUBLIC HEALTH AND PREVENTIVE MEDICINE. By Morton C. Kahn, M.A., Ph.D., D.Sc. New York: Oxford University Press, 1942. 534 pp. Price, \$2.00.
- REPORT—SCHOOL AND COMMUNITY HEALTH WORKSHOP. The Pennsylvania State College. State College, Pennsylvania: Division Health Education, Pennsylvania Department of Health, 1945. 238 pp.
- SUGGESTED GUIDE FOR TEACHING MOTHERS' CLASSES. Maternity Center Division. Brooklyn: Visiting Nurses Association of Brooklyn, 1945. 70 pp. Price, \$1.00.
- SOME PROPERTIES AND APPLICATIONS OF D.D.T. Ministry of Supply. London: His Majesty's Stationery Office, 1946. 34 pp. Price, \$15. (Obtainable from British Information Service, New York.)
- STATE LABOR LAWS FOR WOMEN WITH WAR-TIME MODIFICATIONS (PART V: EXPLANATION AND APPRAISAL). Women's Bureau, Department of Labor. Washington: Gov. Ptg. Office, 1946. 66 pp. Price, \$15.
- TREATMENT OF BRONCHIAL ASTHMA. By Vincent J. Derbes, M.D., and Hugo Tristram Engelhardt, M.D. Philadelphia: J. B. Lippincott, 1946. 466 pp. Price, \$8.00.

## ASSOCIATION NEWS

### SEVENTY-FOURTH ANNUAL MEETING AMERICAN PUBLIC HEALTH ASSOCIATION CLEVELAND, OHIO — NOVEMBER 12-14

*Meetings of Related Organizations—November 11*

### APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

#### *Health Officers Section*

- Berry C. Abernathy, M.D., Madison and Tensas Parish Health Units, Tallaluah, La., Director
- George E. Atwood, M.D., D.P.H., 1110 Elizabeth, Waycross, Ga., Commissioner of Health, Ware County Board of Health
- Terry Bird, M.D., P. O. Box 103, Apalachicola, Fla., County Health Officer
- Roderick M. Buie, Sr., M.D., Guilford County Courthouse, Greensboro, N. C., Guilford County Health Officer
- Samuel P. Burt, M.D., 127 N. Main, Louisville, N. C., Franklin County Health Officer
- John R. C. Carter, M.D., C.M., Dona Ana County Health Dept., Las Cruces, N. M., Health Officer
- Isee L. Connell, M.D., St. Clair County Health Dept., Ashville, Ala., Health Officer
- Hubert D. Crow, M.D., 454½ W. Washington St., Suffolk, Va., District Health Officer
- Henry H. Eisenberg, M.D., 4756 S. Ingleside Ave., Chicago 15, Ill., Director, Venereal Disease Clinics, Chicago Health Dept.
- Joseph F. Emmons, City Hall, Long Branch, N. J., Health Officer
- Robert H. Felix, M.D., M.P.H., Chief, Mental Hygiene Division, U. S. Public Health Service, Washington 25, D. C.
- Joseph P. Franklin, M.D., Box 690, Cumberland, Md., Allegany County and Deputy State Health Officer
- Edward S. Grady, M.D., P. O. Box 447, Smithfield, N. C., Johnston County Health Officer
- Arthur W. Hill, M.D., 134½ S. Broad St., Thomasville, Ga., District Health Officer
- William B. Hunter, M.D., Lillington, N. C., Harnett County Health Officer
- Edwin M. Ireland, M.D., 106 E. 2nd St., Pratt, Kans., Health Director, Pratt County Health Dept.
- Robert R. King, Jr., M.D., P. O. Box 387, Boone, N. C., District Health Officer
- Mark Landquist, 103 Harvard Ave., Modesto, Calif., Health Officer
- Fred Loc, M.D., State Health Dept., Carson City, Nev., State Health Officer
- Roy W. McGee, M.D., M.S.P.H., 923 Court House, Atlanta, Ga., Commissioner of Health, Fulton County Health Dept.
- Edward L. McIntosh, M.D., Box 27, Camden, Ala., Health Officer, Wilcox County Health Dept.
- Cyrus F. Newcomb, M.D., 505 S. Fifth, Champaign, Ill., Acting Director, Champaign-Urbana Health Dist.
- George F. O'Brien, M.D., M.S.P.H., 2410 H St., P. O. Box 1412, Modesto, Calif., Stanislaus County Health Officer
- Charles K. Olivier, M.D., 406 Oak Ave., Lafayette, La., Director, Lafayette Parish Health Unit
- Paul V. Olle, M.D., 6 Rue de Constantine, Toulouse, France, Director of Health, Ministry of Public Health
- H. T. Phillips, M.D., Box 315, Athens, Ohio, Health Commissioner, Athens City-County Health Dept.
- Paul H. Rempel, M.D., Broadway Tower, Enid, Okla., Garfield County Supt. of Health and Director, Venereal Disease Clinic
- Sidney M. Samis, M.D., 57 W. 75th St., New York, N. Y., Junior Health Officer, New York City Health Dept.
- Urcicio Santiago, M.D., Rocha Galvao 30, Salvador, Bahia, Brazil, S. A., Health Officer and Teacher of Epidemiology of the Nursery School of Bahia



Robert F. Sayre, M.D., Columbia and Hamilton County Health Depts., Jasper, Fla., Director

Benton VanDyke Scott, M.D., 116 Quincy St., Hancock, Mich., Director, Houghton-Keweenaw-Baraga District Health Dept.

Louis E. Silverthorn, M.D., P. O. Box 6, Victoria, Tex., Director, Victoria County Health Unit

J. C. Springberg, M.D., 416½ State St., Beloit, Wis., Health Officer, Beloit Health Dept.

Hamilton W. Stevens, M.D., Drawer 664, Wilson, N. C., Director of Public Health, Wilson County Health Dept.

Fred B. Welch, M.D., City Hall, Janesville, Wis., Commissioner of Health, Janesville Health Dept.

Jesse W. Willeox, M.D., Carthage, N. C., Health Officer, Moore-Hoke Health Dist.

George L. Winn, M.D., Box 1358, Lawton, Okla., Director, County-City Health Dept.

Alfred Yankauer, Jr., M.D., 33 Riverside Drive, New York 23, N. Y., Junior Health Officer, New York City Health Dept.

Louis D. Zeidberg, M.D., Box 549, Tappan, N. Y., Health Officer in Training, N. Y. City Health Dept.

Lt. (jg) Berthold Zoffer, USMSTS, USPHS, Alameda, Calif., Asst. Surgeon (R), USPHS

#### *Laboratory Section*

James W. Bartholomew, Ph.D., 620½ W. 41st Drive, Los Angeles 37, Calif., Asst. Professor of Bacteriology, Univ. of Southern California

Hugo Braun, M.D., Univ. of Istanbul, Inst. of Micro., Istanbul, Beyazit, Turkey, Professor of Microbiology

Harley A. Bunner, 21 Branham, Atlanta, Ga., Asst. Bacteriologist, U. S. Public Health Service

Lillian I. Butler, M.S., Agricultural Research Center, Beltsville, Md., Bureau of Entomology

Ornella Calabi, M.S., 415 Central Park West, Apt. 15C, New York 25, N. Y., Laboratory Worker

Joseph J. DiLorenzo, M.S., 4422 South 36th St., Arlington, Va., Asst. Bacteriologist, U. S. Food and Drug Admin.

Louis Gershenfeld, D.Sc., 281 South 63rd St., Philadelphia 39, Pa., Professor of Bacteriology, Philadelphia College of Pharmacy and Science

S/Sgt. Charles C. Henriques, 111 West 96th St., Apt. 10, New York, N. Y., Bacteriologist, First Army Laboratory

Robert W. Kolb, 6642 Hillandale Rd., Chevy

Chase 15, Md., Junior Bacteriologist, National Institute of Health

Isaac Matelsky, 1532 Ansel Rd., Cleveland 6, Ohio, Bacterial Engineer, General Electric Co., Nela Lamp Division

James A. McComb, D.V.M., 375 South St., Jamaica Plain, Mass., Asst. Director, Division of Biologic Laboratories, State Health Dept.

Jose L. Moral, M.D., Victor, Manuel Rendon 405, Guayaquil, Ecuador, S. A., Director, Laboratory of Bacteriology and Immunization

Robert R. Schendel, M.S., 153 Maiden Lane, Alexandria, Va., Post Entomologist, U. S. Army

Genevieve W. Stout, M.A., U. S. Marine Hospital, Venereal Disease, Research Laboratory, Staten Island, N. Y., Bacteriologist

Lillian A. Thomson, Sears, Roebuck and Co., Dept. 817, Chicago 7, Ill., Merchandise Testing and Development Laboratory

Mercedes Vicente de Torregrosa, Ph.D., Presbyterian Hospital, Santurce, Puerto Rico, Director of Laboratory

#### *Vital Statistics Section*

Henry K. Goetz, M.S., Young Men's Christian Assn., Topeka, Kans., Field Representative, Division of Venereal Disease, U. S. Public Health Service

Myron K. Gordon, Ph.D., 28 Chesapeake St., S.W., Washington 20, D. C., Research Analyst, Surgeon Generals Office, Dept. of War

Watson B. Miller, 4704 Yuma St., N.W., Washington 16, D. C., Federal Security Administrator, Federal Security Agency

Murray R. Nathan, LL.B., State Dept. of Health, State Office Bldg., Albany 1, N. Y., Director, Planning and Procedures

Lelia B. Powell, 507 Carondelet St., New Orleans, La., Supervisor, Tabulating Dept., New Orleans Health Dept.

#### *Engineering Section*

Harold O. Clark, 63 John St., Barre, Vt., State Dairy and Creamery Inspector, State Dept. of Agriculture

Robert P. Ellerbusch, 1032 Vaughn, Ann Arbor, Mich., Pest Control Engineer, National Housing Administration, Federal Public Housing Authority, Region VIII

Francis A. Heine, City Hall, Reading, Pa., Chief Engineer, Bureau of Water

Bill A. Kronmiller, 95 Market St., Oakland 4, Calif., Field Service Engineer, The Flox Co., Inc.

William J. Maisel, M.S.P.H., 806 Capitol

Ave., Bridgeport, Conn., Sanitary Engineer, UNRRA

Tom B. Muse, Bedford-Marshall Health Dept., Shelbyville, Tenn., Senior Sanitation Consultant

Earlie B. Needham, 151 U. S. Court House, El Paso, Tex., Senior Asst. Engineer, Pan American Sanitary Bureau

Charles B. Ruegnitz, M.S.P.H., Wayne County Health Dept., Henry Ruff Rd., Eloise, Mich., Sanitarian

Harold C. Taylor, Jr., U. S. Public Health Service, Dist. 4, 707 Pere Marquette Bldg., New Orleans, La., Sanitarian

#### *Industrial Hygiene Section*

Leon Lewis, M.D., Univ. of Calif. School of Public Health, Berkeley 4, Calif., Assoc. Professor of Industrial Health

Matthew Luckiesh, D.Sc., Nela Park, East Cleveland 12, Ohio, Director, Lighting Research Laboratory, General Electric Co.

#### *Food and Nutrition Section*

Ruth E. Baldwin, Gerber Products Co., Fremont, Mich., Dietitian

Ruth Blakely, State Board of Health, Jacksonville, Fla., Nutrition Chemist

Mary T. Davenport, M.S., State Board of Health, Dover, Del., Nutritionist

Helen G. Everett, M.S., 800 S. Washington St., Apt. 302C, Alexandria, Va., Nutritionist, Bureau of Maternal and Child Welfare, D. of C. Health Dept.

Clare M. Hartnett, 1412 Smith Tower, Seattle, Wash., Consultant Nutritionist, State Dept. of Health

Mildred E. Neff, M.A., 620 South Third St., Louisville 2, Ky., Nutrition Consultant, Division of Maternal and Child Health, State Dept. of Health

#### *Maternal and Child Health Section*

Neota Larson, 3426 16th St., N.W., Washington 10, D. C., Asst. to Assoc. Chief, Children's Bureau

#### *Public Health Education Section*

Carmen Acevedo, M.S.P.H., School of Tropical Medicine, San Juan, Puerto Rico, Instructor of Public Health Practice

Virgil T. Anthony, M.A., Tupelo, Miss., State Representative, National Foundation for Infantile Paralysis

Robert G. Carter, State Board of Health, Jacksonville, Fla., Sanitation Consultant

Dorothy L. Clawson, R.N., c/o M. L. Rogers, Earlville, Madison Co., N. Y., Rehabilitation work in China for Presbyterian Board

Francis A. E. Crew, M.D., Usher Institute, Warrender Park Rd., Edinburgh, Scotland,

Professor of Public Health and Social Medicine, University of Edinburgh

George V. Funderburk, 906 Bell Bldg., Montgomery, Ala., State Representative, National Foundation for Infantile Paralysis

Andy Glosecki, 401 Meyers Bldg., Springfield, Ill., State Representative, National Foundation for Infantile Paralysis

John E. Gorrell, M.D., 600 West 168th St., New York 32, N. Y., Associate Professor of Hospital Administration, School of Public Health, Columbia University

William Griffiths, M.A., State Dept. of Health, University Campus, Minneapolis, Minn., Director of Public Health Education

Marie Hazleton, 1216 W. Broadway, Muskogee, Okla., Supervising Nurse, City-County Health Dept.

Catherine D. Hidy, M.P.H., 4001 W. 8th St., Little Rock, Ark., Health Educator, City Health Dept.

David E. Janison, M.P.H., 116 Temple St., Los Angeles 12, Calif., Director of Health Education, City Health Dept.

Mary Woodard Lasker, 405 Lexington Ave., New York 17, N. Y., Secy., Albert and Mary Lasker Foundation

George V. Leadbetter, 801 Glenhaven, East Lansing, Mich., Student, Univ. of Michigan, School of Public Health

Norma I. Marcere, 233 Second St., S.W., Canton 6, Ohio, Health Education Secretary, Stark County Tuberculosis and Health Assn.

Mildred L. Parrish, P. O. Box 431, Tallahassee, Fla., Exec. Secy., Leon County Tuberculosis and Health Assn.

Ixia J. Sifontes, Ave. Gonzalez 8, Rio Piedras, Puerto Rico, Student, School of Public Health, Univ. of Michigan

Wilmer Sims, Box 1838, Abilene, Tex., West Texas State Representative, National Foundation for Infantile Paralysis

Francis Strapp, M.A., 1439 E. 25th Ave., Columbus 3, Ohio, State Representative, National Foundation for Infantile Paralysis

Gloria E. Twisdale, M.P.H., 65 Wethersfield Ave., Hartford, Conn., Health Educator, Hartford Tuberculosis and Public Health Society, Inc.

Sarah Walker, M.S.P.H., Lincoln County Health Dept., Lincolnton, N. C., Health Educator

#### *Public Health Nursing Section*

Laura S. Breesse, R.N., 127 Tacoma Rd., Oak Ridge, Tenn., Supervising Nurse, Oak Ridge Dept. of Health

Irene M. Duffy, 1913 W. Fayette St., Baltimore 23, Md., Educational Director, Instructive Visiting Nurse Assn.

- Ruth M. Graham, R.N., 323 S. Michigan Ave., Villa Park, Ill., Supervising Nurse, DuPage County Health Dept.
- E. Louise Gronlund, R.N., 821 N. 3rd St., Fargo, N. D., Supervisor, Public Health Nursing Service, City Health Dept.
- Thora G. Hanbury, R.N., Court House, Fairbault, Minn., Rice County Public Health Nurse
- M. Carolyn Hawkes, R.N., 35 Bigelow St., Cambridge, Mass., Staff Nurse, Cambridge Visiting Nursing Assn.
- Iva Lee Jenkins, 1015 Hanover St., Chattanooga, Tenn., Nursing Supervisor, Chattanooga-Hamilton County Health Dept.
- Alice G. Kraft, 4755 Capitol Ave., Omaha, Nebr., Asst. Director and Educational Director, Visiting Nurse Assn. of Omaha
- Ruth E. Lansing, R.N., 5231 N. Spaulding Ave., Chicago, Ill., Field Nurse, Chicago Board of Health
- Margaret M. Malone, South Union Rd., Station A, Buffalo 6, N. Y., Staff Nurse, Erie County Health Service
- Margery T. Overholser, M.A., 525 E. 68th St., New York 21, N. Y., Assoc. Professor of Public Health Nursing, N. Y. Hospital School of Nursing, Cornell University
- Mary A. Rooney, City Hall, Room 318, Syracuse, N. Y., Director, Bureau of Nursing, City Health Dept.
- Kathryn H. Smith, R.N., 2157 Euclid Ave., Room 12, Cleveland, Ohio, Supervisor, Visiting Nurse Assn.
- Florence E. Vander Woude, R.N., 1103 Henry St., Ann Arbor, Mich., Student, School of Public Health, Univ. of Michigan
- Lucille A. Wallis, North East, Md., Consultant, Venereal Disease Nursing, State Dept. of Health
- Mary E. Wilson, R.N., Lenore Apts., Lenore St., Winnipeg, Man., Canada, Senior Public Health Nurse, Selkirk Rural Health Unit

#### *Epidemiology Section*

- Arthur E. Callin, 1407 U. S. Appraisers Bldg., San Francisco 11, Calif., Public Health Representative, U. S. Public Health Service, Dist. No. 5
- Walter R. deForest, M.D., M.P.H., Harvard School of Public Health, 55 Shattuck St., Boston, Mass., Student
- Jih-hsin Fan, M.D., Dr.P.H., Shanghai Medical College, Feng-Lin Chios, Shanghai, China, Commissioner of Health of Dairen
- Dean S. Fleming, M.D., M.P.H., State Dept. of Health, University Campus, Minneapolis 14, Minn., Director, Division of Preventable Diseases
- Carlos Luis Gonzalez, M.D., 403 North Broad-

- way, Baltimore 31, Md., Rockefeller Foundation Fellowship, Epidemiologist, Division of Yellow Fever, Caracas, Venezuela, S. A.
- Patricia Shcrwood, P. O. Box 857, Fort Lauderdale, Fla., Senior Chemist, City of Fort Lauderdale
- Thomas H. Weller, M.D., 8 Netherlands Rd., Brookline, Mass., Asst. Resident, Children's Hospital, Boston
- Mildred Weeks Wells, M.D., 29 Wheeler Ave., Pleasantville, N. Y., In Charge of Study on Community Prevention of Air-borne Infection, Westchester County Health Dept.

#### *School Health Section*

- James V. Gentilly, D.D.S., 724 Rose Bldg., Cleveland 15, Ohio, Mouth Hygiene Committee and Dental Advisory Committee of Cleveland Dental Society
- Rces, Jones, Ed.M., 305 Riverside Drive, Apt. 3A, New York, N. Y., Staff Member, School Health Bureau, Metropolitan Life Insurance Co.
- Fredrick J. Lewy, M.D., 30 W. 73rd St., New York 23, N. Y., Health Officer in Training, New York City Health Dept.
- Thomas E. Shaffer, M.D., Ohio State University, University School, Columbus 10, Ohio, Physician and Assoc. Professor of Pediatrics and Education

#### *Dental Health Section*

- Harold K. Addelston, D.D.S., 424 Madison Ave., New York, N. Y., Asst. Professor and Head of Dept. of Dentistry for Children, N. Y. University, College of Dentistry
- Melvin L. Dollar, 1328 Eye St., Washington, D. C., Exec. Director, Group Health Assn.
- M. Joel Freedman, D.D.S., 300 West 23rd St., New York, N. Y., Dentist, Faculty, Childrens Dentistry, New York University, College of Dentistry
- Marion H. Gray, D.D.S., 507 Boyle Bldg., Little Rock, Ark., Dental Representative on Arkansas Hospital and Health Service Survey
- Harold Hillenbrand, D.D.S., 222 E. Superior St., Chicago 11, Ill., Editor, Journal of the American Dental Assn.
- Andrew H. Imhoff, D.D.S., 98 Nursery Lane, Columbus 6, Ohio, Chief, Division of Dental Health, City Dept. of Health
- William E. Reid, D.D.S., 30 Canal St., Fort Plain, N. Y., Dentist
- Robert Reiss, D.D.S., 161 E. Tremont Ave., New York 53, N. Y., Dentist, Community Service Society
- Solomon N. Rubenstein, D.D.S., 630 West 168th St., New York 32, N. Y., Assoc. Prof. of Dentistry, Columbia University

Herman Schuman, D.D.S., 31-90 Steinway St., Long Island City 3, N. Y., Dentist  
 Gordon R. Winter, D.D.S., 4001 Spruce St., Philadelphia, Pa., Dentist  
 Louis E. Yerkes, D.D.S., 825 Linden St., Allentown, Pa., Dentist

#### *Unaffiliated*

J. Wellington Crane, M.A., 986 Maurice Ave., Rahway, N. J., Clerk, New Jersey Reformatory  
 Henry C. Daniels, M.A., 2507 N. Ohio St., Arlington, Va., Chief, Administrative Control Section, Health Services Division, Labor Branch, U. S. Dept. of Agriculture  
 Brahna C. Hutchins, 420 Lexington Ave., New York 17, N. Y., President, Safety Research Institute  
 Peter F. Lansing, University Hospital, Ogden & Olcott, Chicago, Ill., Student, University of Chicago  
 Eloise R. Sherman, 1119 Cotton Exchange

Bldg., Dallas, Tex., Regional Administrative Consultant, U. S. Childrens Bureau  
 William H. Weidman, M.D., C.M., Uncas on Thames, Norwich, Conn., Supt. and Medical Director, Uncas on Thames

#### DECEASED MEMBERS

Maharaj Mom Chow Bichitr, Bangkok, Siam, Elected Life Member 1929, Unaffiliated  
 Jaroslav Drbohlav, M.D., D.P.H., Prague, Czechoslovakia, Elected Member 1946, Laboratory Section  
 Kathryne Gabriel, R.N., Deposit, N. Y., Elected Member 1924, Public Health Nursing Section  
 L. W. Hutchins, New York, N. Y., Elected Member 1942, Public Health Education Section  
 William C. Welling, Hartford, Conn., Elected Member 1923, Elected Fellow 1934, Vital Statistics Section

#### A YEAR OF PLACEMENT ACTIVITY

On November 1, the Association's Vocational Counseling and Placement Service, which has been functioning under a coöperative agreement with the U. S. Public Health Service, completed its first year of operation. During that year 840 new openings were brought to the attention of the Placement Service and 270 trained candidates for positions registered their availability. An active referral system has led to placements in a gratifying number of cases. Insertions on the employment pages of the Journal have been in increased demand in recent months.

There still exists a serious shortage of trained personnel in the public health field. It is believed that the counseling and recruiting activities of the A.P.H.A.-U.S.P.H.S., which have been called upon mainly by veterans and military personnel, have guided a considerable number of promising young men and women to training facilities for the various types of positions in the public health field. Up-to-

date information on fellowships and training centers are kept on file, and coöperation with related counseling and placement agencies is maintained.

Of the professional groups served, the greatest number of opportunities on the register, (329 at last count), is for physicians. Trained and experienced administrators of health programs, full-time clinicians, epidemiologists, school and industrial physicians are in demand, as are also newcomers to the field who are offered training opportunities after employment by several of the states. There are interesting opportunities for public health and sanitary engineers with varying lengths of experience.

In the engineering group a trend toward industry has been noticeable. The reason given by the individual candidates is usually the incentive of higher salaries in the industrial positions. The demand for health educators with M.P.H. degrees from accredited schools of public health and with some field experience also exceeds the supply. In

the laboratory field the number of openings coming to our attention match approximately the requests for positions. Dentists, statisticians, nutritionists, administrators without M.D. degrees, and veterinarians are among the other groups which have been served.

Booth 16 in the Scientific Exhibit area has been assigned to the Association's Vocational Counseling and Placement Service for the Annual Meeting at Cleveland. The Association staff hopes to use this opportunity to make many valuable contacts with employers and candidates in the public health field.

DR. KANDLE JOINS NEW JERSEY  
DEPARTMENT OF HEALTH

Roscoe P. Kandle, M.D., M.P.H., who since January, 1946, has been Associate Field Director of the Committee on Administrative Practice staff, A.P.H.A., has resigned as of October 15 to join the New Jersey State Department of Health in Trenton as Director of the Bureau of Preventable Diseases. This Bureau includes divisions of venereal disease, maternal and child health, tuberculosis, industrial health, dental health, and cancer, with other activities planned.

# National Conference on Local Health Units

## AN INNOVATION IN SELF-EDUCATION

FROM September 9 to 13 there was conducted by the School of Public Health of the University of Michigan at Ann Arbor an educational conference so novel and successful as to call for this brief report to the readers of the *Journal*.

The conference was proposed by the Subcommittee on Local Health Units of the A.P.H.A. Committee on Administrative Practice. It was sponsored also by the Association of State and Territorial Health Officers, the program committee including representatives of both of these bodies, and of the School of Public Health of the University of Michigan.

The student body, if we may so describe the invited assemblage, consisted of state health officers and their directors of local health services. The teaching staff was drawn from several university faculties and from a number of official and voluntary health organizations.

The main object of this conference was the consideration of all aspects of the proposal to make prompt progress toward the provision of at least basic local health services for every area and population group within continental United States. The uniqueness in the undertaking was that the medical health officers holding the highest responsible positions in our state governments were invited to assemble under wholly academic auspices for intellectual, objective, impersonal discussion of a major problem of administration within the framework of local civil government. Apart from the pressure and argument of national and state politics, and free from the temptation to develop opinions biased by potential financial benefits to accrue to their respective states, these

key representatives of health administrative philosophy and action in our country came without obligation except that of openmindedness and without commitment other than to use the opportunity for the benefit of the people they serve.

Travel and living costs were met by a grant from the W. K. Kellogg Foundation to the University of Michigan, except in instances where official resources were used. Honoraria to the group of teachers were provided from university funds.

The three morning hours each day were devoted to formal presentation of the academic or theoretical and to the administrative or practical aspects of a major topic without discussion. Two hours in the afternoon were occupied in group discussions of the four topics dealt with in the morning. The leader of each group was selected from among the health officers while the author of the paper presented in the morning served as consultant, stimulating, guiding, and sharing actively in the questions and answers, all with the purpose of summarizing the ideas and tentative common opinion of the group upon the topic at issue. The hour from 4 to 5 was devoted to a report to the reassembled class and teachers to hear and discuss further, modify, approve or otherwise the summaries from the four discussion groups.

The five days were spent upon the following topics:

1. The reasons for and possibilities of organizing local health services for each jurisdiction of such size as will permit efficient and economical performance of the required functions, together with consideration of existing and desirable legal authority for these purposes.
2. Scope and facilities, indispensable func-

tions, personnel and training for local health work.

3. Principles of local government organization and finance and methods by which inter-relations between state and local governments may achieve sound financial support for local health departments, and the hearing of public opinion and public relations upon adequacy of support.

4. Promotion of local health services by organization and action of voluntary associations of citizens, by support of physicians, by professionally and educationally sound public relations leadership.

5. Recruitment of personnel, salary schedules, merit system, promotion of professional and technical education of workers needed in local health departments.

The latter half of the fifth day was spent in roll-calling the states to review their successes and difficulties in arranging for local health departments throughout each state area. Each state responded to the exhibit of the map of present and proposed distribution of local health departments on a full-time basis by a brief note of its problems to be overcome and the direction and strength of its plans for the immediate future.

It is planned to have the several lecture presentations, pertinent discussions, and group conclusions published as a supplement to the *American Journal of Public Health* as soon as practicable.

Only three of the states lacked representation at this conference. The health interests of the federal government and of several of the national foundations were included among the invited guests. Only the limits necessarily imposed upon the hospitality of the university by dearth of living quarters forbade the inclusion of a larger audience for this interesting exploration and use of an educational procedure of considerable merit, applicable with benefit to other groups and at other universities.

The following resolution was presented by the Association of State and Territorial Health Officers at the final

meeting of the National Conference on Local Health Units described above:

The Association of State and Territorial Health Officers in executive session hereby expresses appreciation for the unusual opportunity afforded by the National Conference on Local Health Units by bringing together for a week's work the leaders in public health training and the state health officers and directors of local health service of the forty-eight states. It especially appreciates the efforts of Dr. Haven Emerson, Chairman of the Subcommittee on Local Health Units of the Committee on Administrative Practice, as the originator and stimulator of the Conference, and those of Dr. Henry F. Vaughan, Dean of the School of Public Health, for his untiring efforts in making the Conference a success.

It expresses its deep gratitude to the University of Michigan for extending its hospitality and making available its staff, to the American Public Health Association for its efficient assistance and co-sponsorship, and to the W. K. Kellogg Foundation for making funds available to make the Conference possible.

To all of the above it is grateful for this unique privilege.

Because of the wealth of the material presented and its potentially invaluable use for the promotion of total coverage of the nation with full-time local health units, it is the unanimous hope of the Association that the proceedings of the Conference will be published as a supplement to the *American Journal of Public Health*.

*The Association of State and Territorial Health Officers*

F. C. BEELMAN, *President*

V. A. GETTING, *Secretary*

The following motion with respect to future conferences on local health units was also presented to the final session and unanimously approved:

As evidence of our recognition of the great value of this Conference, we recommend to those who are responsible for planning this Conference that it be repeated, not necessarily next year but at such a time as in their judgment it is justified.

HAVEN EMERSON, M.D.

*Chairman, Subcommittee on Local Health Units*

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in October Journal)

**Wanted: Physician, Tuberculosis Specialist,** for sanatorium in Seward, Alaska. Salary \$550 per month, quarters furnished. Give all qualifications. Write C. Earl Albrecht, M.D., Commissioner of Health, Juneau, Alaska.

**Wanted: Tuberculosis Specialist,** trained in public health, for Director, Division of Tuberculosis Control. Salary \$7,800. Write C. Earl Albrecht, M.D., Commissioner of Health, Territorial Department of Health, Juneau, Alaska.

**Wanted: Physician** with public health experience to act as Director, Division of Communicable Disease Control and Assistant to Commissioner of Health. Salary \$650 per month. Give all qualifications and experience. Write C. Earl Albrecht, M.D., Commissioner of Health, Juneau, Alaska.

**Wanted: Director, Division of Venereal Disease Control** in Bureau of Preventable Diseases. Headquarters Jacksonville. Salary \$5,400-\$7,200. Start well qualified man at \$6,000. Write State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida.

**Wanted: Medical Director** for Venereal Disease Rapid Treatment Center based on hospital ship in Jacksonville. Salary \$5,400-\$7,200. Start well qualified man at \$6,000. If bachelor, quarters aboard ship and meals at \$20 per month furnished. Write State Health Officer, Florida State Board of Health, P. O. Box 210, Jacksonville, Florida.

**Wanted: Venereal Disease Control Physician** for Health Division. Training and experience in clinical, laboratory, and public health aspects of venereal disease control required. Full time. Civil Service. Salary \$377-\$425 per month. Write Department of Personnel, City of St. Louis, Mo., 14th and Market Streets.

**Wanted: Trained and Experienced Full-time Health Officers** for county health departments in California. Salaries range from \$5,400 to \$7,200. California

license required for employment. Address inquiries to Dr. Ellis D. Sox, Div. Local Health Service, State Dept. Public Health, 760 Market St., San Francisco, Calif.

**Wanted: Assistant in Health Division.** Training and experience in community health organization or public health education necessary. Salary \$3,000-\$3,500 depending on qualifications. Write Julia L. Groscop, Health Consultant, Council of Social Agencies, 311 South Juniper Street, Philadelphia 7, Pa.

**Wanted: Bacteriologist** for midwestern modern institutional laboratory. Teaching functions in nurses' training school as well as in contemplated school for laboratory technicians. Good journal library facilities. Candidates with master's degree and some experience preferred. Maximum starting salary \$3,000. Write Box O, Employment Service, A.P.H.A.

**Wanted: Nutrition Workers** with graduate work in dietetics or nutrition and two or more years' experience for health program extension in Georgia. Starting salary \$2,880. Write Personnel Administrator, Georgia Dept. of Public Health, State Office Bldg., Atlanta 3, Ga.

The New Mexico Merit System Council announces unassembled periodic examinations for the following positions in the Department of Public Health:

Tuberculosis Control Officer..	\$400-\$500
District Health Officer.....	300- 400
Director, Sanitary Engineering and Sanitation .....	300- 400
Supervisor of Milk Sanitation..	250- 300
Supervisor of Food Sanitation..	250- 300
Sanitarian .....	175- 215
Venereal Disease Clinician.....	350- 450
Venereal Disease Lay Investigator .....	175- 215
P. H. Nurse Midwife Consultant .....	250- 300
Public Health Nurse Midwife..	200- 250
Public Health Nurse.....	175- 215
Graduate Nurse.....	165- 185
Associate Engineer.....	250- 300



**Wanted:** Health Educator with ability to work constructively with citizen groups in southern city with high percentage industrial workers and Negroes. Salary \$200 per month plus travel expenses. Write R. W. Garnett, M.D., Director of Public Health, Danville, Va.

**Wanted:** Industrial Hygiene Engineer. Minimum of three years in public health engineering including two years in industrial hygiene engineering required. Beginning salary \$337 with maximum of \$417 in five years. Temporary appointment pending Civil Service examination. Also, industrial hygiene technician to assist in laboratory or field studies under supervision of the engineer or chemist. College degree, courses in chemistry or engineering and/or experience in industrial hygiene field work required. Beginning salary \$233 with \$288 maximum. Write A. V. Nasatir, M.D., Director, Division of Industrial Hygiene, Dept. of Health, 116 Temple St., Los Angeles 12, California.

**Wanted:** Two Public Health Nurses for generalized nursing program October 1, 1946. Salary \$200 per month for work week of 37½ hours. Car maintenance at six cents per mile. Write Richard Sears, M.D., Director, Muskegon City-County Health Department, Court House, Muskegon, Mich.

**Wanted:** Public Health Nurse or one wanting to learn public health nursing while at work under supervision. Salary \$160 per month. Write R. W. Garnett, M.D., Director of Public Health, Danville, Va.

**Wanted:** Public Health Nurses. Metropolitan area of Washington. Salary \$2,550 plus gasoline and oil. Write Mrs. E. Earle, Chief, Bureau of Nursing, Arlington County Health Department, 1800 North Edison Street, Arlington, Va.

**Wanted:** Public Health Nurses for staff positions in generalized program. Salary \$1,800-\$2,400. Write: Director, Visiting Nurse Association, 1715 Crawford, Houston 3, Tex.

**Wanted:** Three public health staff nurses. Well organized unit and training base. Generalized service. Graduates without public health training \$1,920-\$2,400. Graduates with full year of public health training in recognized school \$2,100-\$2,640. Eligibility and classification to be cleared by State Merit System. Own car essential. Adequate travel allowance. Write Dr. D. D. Carr, Director, Topeka City-Shawnee County Health Dept., Topeka, Kans.

**Wanted:** Qualified public health nurses for resort areas of Michigan, to help develop expanding programs of local health departments. Personnel policies written to offer staff members opportunities to enjoy water and woodland sports and outdoor life year round. Positions open immediately for 10 staff nurses at salary range of \$2,100-\$2,220, 2 senior nurses at \$2,400 and 2 supervising nurses at \$2,700-\$3,000. Write for personnel form to Director, Northern Peninsula Office, Michigan Dept. of Health, Escanaba, Mich.

**Wanted:**

1. Director, Division including Maternal and Child Health and School Health. Will have an assistant. Full responsibility for planning and developing maternal program and for school examinations. Fifteen health centers in area. Salary \$4,000-\$5,000, depending on qualifications and merit system approval.

2. Director, Health Education. To direct general public health education program, cooperating closely with departments of education and Chattanooga-Hamilton Co. Health Council. Considerable emphasis on tuberculosis control. Educational and public health training required (degree required). Salary \$3,000-\$3,600, depending on qualifications as above.

3. Director, Tuberculosis Control Division. Physician well trained and experienced in reading both photofluorographic and conventional type chest x-rays required. To be in charge of division including visible case register and related records, x-ray clinic, mobile unit and to consult with nursing staff of twenty. Salary \$4,000-\$5,000, depending on qualifications.

4. Public Health Nurses, junior and senior staff nurses. General public health program, urban, rural or combination under excellent supervision. Must have own automobiles. Salaries \$1,800-\$2,400, with extra mileage allowance.

Write Chattanooga-Hamilton County Health Department, Paul M. Golley, M.D., Director, Chattanooga, Tenn.

**Wanted:** Physician to head school health program in California city. Annual salary \$4,000. Salary for 11 months' service \$3,600. Write Box X, Employment Service, A.P.H.A.

**Wanted:** Several Sanitarians qualified in milk, food, and general sanitation in western state health department. Write Box Z, Employment Service, A.P.H.A.

**Wanted:** Health Officer for Montgomery County (Central Illinois). Newly established health department; proposed staff of nine; population 35,000. Salary

\$6,000-\$7,000 depending on qualifications, plus travel allowance. Write Roland R. Cross, M.D., Director, Illinois Dept. of Public Health, Springfield, Ill.

**Wanted:** Qualified Public Health Nurse for staff position in generalized program in Cortland, N. Y. Opportunity for rural and urban experience in County Health Dept. Transportation provided. Salary \$2,178-\$2,420. Write Cortland County Health Dept., Cortland, N. Y.

**Wanted:** Laboratory Technician, female. For 130 bed Tuberculosis Sanatorium in the Middle West. Experience in taking x-rays of the chest desirable but not essential to qualify for the position. Eight hour duty; Saturday afternoons and Sundays off. No night work. Salary \$150 per month with full maintenance. Give age, race, experience, and reference when applying. Write Box P, Employment Service, A.P.H.A.

**Wanted:** Industrial Hygienists. Positions open for personnel with either engineering, chemical, or related scientific training, in state industrial hygiene division. All positions covered by state merit system. Monthly salaries \$280-\$400 depending on qualifications. Write Division of Industrial Hygiene, Georgia State Health Dept., Atlanta 3, Ga.

**Wanted:** Two public health staff nurses for full-time health unit, generalized program. Beginning salary \$220. Experience required. Also, one public health nurse supervisor. Beginning salary \$250. Degree desirable. Write Director J. T. Duncan, M.D., Box 110, Visalia, Calif.

**Wanted:** Virologist, for full-time research. Must have thorough experience in laboratory techniques of virus disease research. Salary \$3,500-\$6,000, depending on training and experience. Write Box G, Employment Service, A.P.H.A.

**Wanted:** Health officer or pediatrician with administrative and public health experience, to serve as assistant health officer in charge of Maternal and Child Health of King County, Washington. Salary \$6,000 plus travel. Write Dr. J. D. Fouts, Health Officer, King County Dept. of Public Health, Seattle 4, Wash.

**Wanted:** Physician for Director of Division of Venereal Disease Control in large county health department. Several large clinics in operation. Must be able to direct and supervise a complete V.D. Control Program. Specialized training and experience in this work required. One with public health training and experience preferred. Position under Civil

Service. Starting salary \$6,900 plus travel allowance. Maximum salary \$7,800. Write, giving full particulars and earliest date available, Director, Wayne County Health Dept., Henry Ruff Road, Eloise, Mich.

**Wanted:** Associate Secretary for Health Division, Council of Social Agencies of midwestern city; duties are those involved in a community program of coordination and planning, with particular reference to the public health field. Graduation from an accredited college or university and experience, including some executive experience in the health field essential. Salary \$3,400-\$5,400. Write Box E, Employment Service, A.P.H.A.

**Wanted:** Industrial Hygiene Chemist Class III. Salary \$260-\$310 per mo. Must be a graduate of an accredited college with a major in chemistry. Three years' experience in professional analytical chemistry and research required. Write Industrial Hygiene Unit, Wisconsin State Board of Health, State Office Bldg., Madison 2, Wisc.

**Wanted:** Sanitarian and dairy inspector. Must be trained and experienced in all phases of inspection work. Department furnishes Pickup and pays all expenses of operation and repair. Write State Dept. of Agriculture, Room 310, Capitol Bldg., Cheyenne, Wyo.

**Wanted:** Bacteriologist with equivalent rating of junior grade, A.B. or B.S. degree, and at least one year experience in a public health laboratory, to work in County Laboratory, acting in capacity of a State Branch Laboratory. Permanent position, salary \$2,180 per annum. Write Arlington County Health Department, P. O. Box 151, Arlington, Va.

**Wanted:** Assistant Bacteriologist-Serologist for health department laboratory. College degree. Salary \$2,600. Write Charles A. Neafie, M.D., Director of Public Health, Pontiac 15, Mich.

**Wanted:** Supervisor for Public Health Nurses. Minimum requirement, certificate in public health nursing. Salary \$3,200. Transportation provided. Write Charles A. Neafie, M.D., Director of Public Health, Pontiac 15, Mich.

**Wanted:** Director of city health department in large western city, state capital. Position under Merit System. One year graduate study in public health required. Salary \$6,000-\$7,200. Write Box A, Employment Service, A.P.H.A.

**Wanted:** Three public health nurses for staff positions in City Bureau of

Health, serving population of 45,000:  
 (1) One white nurse with course in public health and experience, \$190 per month. (2) One white nurse with course and no experience, \$156.90 per month, or without course or experience \$143.75. (3) One Negro nurse without course or experience, \$143.75. Write S. D. Sturkie, M.D., Director of Public Welfare, City Hall Annex, Lynchburg, Va.

**Wanted:** Public Health Nurse with degree and public health experience for administrative position in newly organized cancer program. Salary \$3,100. Furnish own car, gas and oil furnished. Also public health nurse with degree and public health experience for educational program. Must own car. Salary \$3,100. Write Box B, Employment Service, A.P.H.A.

### POSITIONS WANTED

**Bacteriologist - Immunologist** desires permanent position in medical or public health bacteriology and immunology. Doctorate from Eastern university. Several years' research and teaching experience. Veteran. Write Box L-495, Employment Service, A.P.H.A.

**Bacteriologist and Parasitologist** with 4 years' experience as sanitarian and over 3 years' experience in Army medical and sanitary bacteriology, recently 1st Lt., Sanitary Corps, AUS, seeks position in public health laboratory or research in industrial bacteriology. Write E-490, Employment Service, A.P.H.A.

**Bacteriologist - Serologist**, thoroughly experienced and capable; teaching, public health and hospital diagnostic routine; excellent references. L-475, Employment Service, A.P.H.A.

**R.N., B.S.** Wide background of experience in all fields of promotion and health education with official and voluntary agencies. Ability to organize long-range programs and work effectively with staffs and board members. Seeks position in New York City or within commuting distance. Write Box N-386, Employment Service, A.P.H.A.

**Parasitologist, M.S., female**, five years' experience in research and routine laboratory work also in allied biological fields. Write L-500, Employment Service, A.P.H.A.

**Health Educator** experienced in community organization work plus university teaching and adult education. Wishes position in community organization work or with special community project in health education. Write Box H-520, Employment Service, A.P.H.A.

**Pathologist, Board Diplomate**, competent and experienced in pathologic anatomy, clinical pathology, bacteriology and tropical medicine; years of public health experience as laboratory director and research associate; consultant, professor and executive; numerous publications, excellent references. Age 40. L-472, Employment Service, A.P.H.A.

**Executive** with long service in public health education and public relations in a large state health department available after January 1. Experienced in editorial work and in planning and executing special programs such as accident prevention, diphtheria immunization, convention planning. Part- or full-time. Write Box A-525, Employment Service, A.P.H.A.

### Advertisement

## Opportunities Available

**WANTED—**(a) Physician trained and experienced in infant care to direct maternal and child health services, municipal department of health; newly-created position unimpeded by politics; woman eligible; \$5,000-\$6,000 with provision for salary advancements to \$9,900; large city in Middle West. (b) Physician to take over the superintendency of general county hospital and, also, to serve as county physician; hospital cares primarily for indigent patients; winter resort town of 55,000; \$700; Southwest. (c) Ophthalmologist, Diplomate of American

Board, to become associated with national health agency; duties consist of participating in program which includes activities related to industrial and school hygiene as well as general problems of eye health; headquarters in New York. (d) Young physician to head school health program; staff of six nurses; all-year round winter resort town in Southern California. (e) Medical coordinator for state crippled childrens division; experience in pediatrics, public health or orthopaedics required; \$5,500-\$8,000, depending upon qualifications; Middle

## Opportunities Available (cont.)

West. (f) Public health physician for field position in Latin American Republic. (g) Two men and, also, young woman physician for student health appointments, university expecting enrollment of 18,000 (13,000 men); new student health building; professional staff comprised of seven internists, three psychiatrists, allergist with other specialties represented on part-time basis; well equipped infirmary of 60 beds; complete x-ray and laboratory facilities; possibility of teaching appointment if physician wishes it; salary range \$4,500 to \$5,250 with possibility of early increase. PH111-1 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—Dentist, preferably qualified in public health dentistry, for directorship of dental health in Southern state; immediately. PH111-2 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Health educator to work in conjunction with public health and medical department of large industrial company; duties consist of preparation and dissemination of information relating to public health; West. (b) Health educator; generalized program; New England; \$4,000. (c) Health educator for newly-created position of coordinator for division of health, metropolitan and county organization; must be qualified to direct community-wide health educational program; should be skilled in preparation of education units, community organization; radio script writing, public health journalism, public speaking. PH111-3 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Sanitarian; important industrial project; South. (b) Assistant sanitation director; national organization; duties include conducting educational program; practical experience as sanitarian in food industry desirable. (c) Industrial hygienist; research position with large industrial company; duties consist of investigating chemical toxic hazards to which workers are exposed and the possible toxic hazards of products which are sold to the public; training and experience in industrial hygiene required; considerable training in chemistry, especially organic chemistry, and physiology desirable. PH111-4 The Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

WANTED—(a) Executive secretary; district nurses' association; present membership 600; most desirable location; South. (b) Public health instructor, large teaching hospital; preferably, someone willing to assume responsibility for student program in outpatient department; faculty rank; \$200, complete maintenance. (c) Public health nurse; voluntary agency; town of 35,000 located on outskirts of university center of the East; opportunity for continuing studies. (d) Public health nurse for school nursing; small town located in Chicago area. (e) Associate for nursing division, national health agency; administrative ability and experience required; headquarters in New York City. (f) Supervisor of generalized public health program inaugurated three years ago; staff of ten nurses engaged in active program; preferably someone qualified to direct expanding program; South. PH111-5 Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago 11.

## Advertisement

## Opportunities Wanted

Dentist now on terminal leave; duties during past four years have been chiefly in general practice with special emphasis on prosthetics and oral surgery; is particularly interested in the field of nutrition as related to oral health and periodontia; special courses in nutrition and oral pathology; B.A. and D.D.S. degrees, eastern schools; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Health educator; B.S., M.S. and Ph.D. degrees; several years, instructor in biology, bacteriology and health; state university; three years, public health educator, city and county health department; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health physician; Master's degree in Public Health, Johns Hopkins; twelve years' experience as professor of preventive medicine, public health and industrial medicine, university medical school; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Public health nursing administrator; A.B. and M.A. degrees; professionally trained in university schools; eight years' interesting experience as public health supervisor; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Sanitary chemist; B.S., M.S., and Ph.D. degrees; has done considerable research and field work, particularly with wastes from synthetic rubber plants, food dehydration plants, etc.; several years' industrial experience which included research on explosives and alkalies; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

Young man expecting early discharge is available for position in public health or bacteriology; B.A. (major in biological sciences and education); M.S. (Biology); M.P.H.; five years' teaching experience, three years, head of department of hygiene and sanitation where he also directed clinical laboratory department; several years with the public health service as sanitarian; for further information, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago 11.

## NEWS FROM THE FIELD

### MEDICAL MEMORIAL FUND

A new foundation has been organized for medical research covering all diseases and all medical problems. Known as the Medical Memorial Fund, its aim is to see that all problems which are most in need of investigation receive more adequate attention than at present. Because the greatest need at this time is for research on the cardiovascular-renal diseases and on aging, these fields are particularly emphasized in the Fund's research program.

Research grants will be made by a Scientific Committee aided by Subcommittees on Heart and Arteries, Hypertension, Nephritis, Arthritis and Rheumatism, Gerontology, Cancer, and Senile Psychiatry, as well as 15 special consultants. About 50 of the foremost American medical scientists will cooperate in making decisions about the disbursement of grants.

Officers of the Fund are:

*Chairman*—Harlow Shapley, Ph.D., Harvard College Observatory

*President*—Henry S. Simms, Ph.D., College of Physicians and Surgeons

*Vice Presidents*—Russell L. Cecil, M.D., Cornell Medical College; J. Murray Steele, M.D., Goldwater Memorial Hospital

*Secretary*—Marvin R. Thompson, Ph.D., Connecticut

*Treasurer*—Guy Emerson, Bankers Trust Company

Dr. Steele also serves as *Medical Director* of the Fund.

In addition to the President, Vice President, Medical Director, and Secretary, the Scientific Committee includes A. J. Carlson, Ph.D., Harry Goldblatt, M.D., Theodore G. Klumpp, M.D., Chauncey D. Leake, Ph.D., William deB. MacNider, M.D., D. D. Van Slyke, Ph.D., A. Ashley Weech, M.D., and George H. Whipple, M.D.

In announcing the new Fund, it is indicated that at least \$10,000,000 could profitably be added annually to the support of medical research. Heretofore, about \$5,000,000 has annually been made available by such endowed foundations as Commonwealth, Macy, Markle, Rockefeller, and others. Of this amount, \$94,000 was for research on diseases of the heart and arteries. This represents 17 cents per death; diseases of the kidneys received only 38 cents per death. The problem of aging has been almost entirely neglected; arthritis and rheumatism have received far too little attention.

The Fund will make its chief drive for gifts from the general public, and will accept any amount from \$5 to \$5,000. A donor may make his gift as a memorial to someone who has died. In such case, a dignified memorial certificate is inscribed with the name of the one whose memory is honored as well as the name of the donor. Gifts should be sent to: Medical Memorial Fund, 650 West 165th Street, New York 32.

Physicians are informed that they can aid the Fund either with personal gifts or as agents for the Fund in requesting gifts from their friends and patients.

### NEW TRICHLOROETHYLENE LIMITS

Trichloroethylene in sufficiently high quantities has narcotic properties similar to chloroform. Prolonged or frequently repeated exposure to concentrations higher than 200 p.p.m. may injure the central nervous system and possibly the liver.

According to the latest standard, "Allowable Concentration of Trichloroethylene" (approved August 6, 1946) of the American Standards Association,

200 p.p.m. of air by volume is the maximum allowable concentration of trichloroethylene. This corresponds to 1.07 mg. per liter at 25° C. and 760 mm. Hg for exposures not exceeding a total of eight hours daily. The above standard is available as Z37.19-1946 from the American Standards Association, 70 East 45th Street, New York 17, N. Y. for 30 cents.

#### FOR BETTER HOUSING

According to a recent news release of the National Housing Agency, Office of Housing Expediter, the U. S. Public Health Service will assign engineers to the National Housing Agency to serve as consultants on public health and environmental sanitation in connection with the "Veterans Emergency Housing Program."

A supervising sanitary engineering consultant will be assigned to the N.H.A. headquarters in Washington and a qualified engineer is to be provided for each of the eight regional N.H.A. offices. Training by the Public Services Division of N.H.A. will be given to each staff consultant prior to his assignment.

When assigned to the regional offices the engineers will work under the direction of the regional expeditors and in collaboration with the Land and Public Health Services Specitlist of the region.

#### NEW SANITARY LABORATORY AT JOHNS HOPKINS

The opening of a new Sanitary Laboratory in the Department of Sanitary Engineering is announced by Dr. Abel Wolman, Professor of Sanitary Engineering, The Johns Hopkins University. These laboratories are designed for graduate study in research in sanitary engineering and water resources problems, particularly with those relating to the chemistry and biology of water supplies, sewage dis-

posal systems, polluted waters, industrial wastes, and the ecology of estuaries. Courses offered in the laboratories will complement those offered by Professor Wolman and Associate Professor Geyer by furnishing formal and research training in the bacteriological, biological, and chemical techniques basic to sanitary engineering. A unique feature of the work is the extension of facilities for mutual study of water resources problems by those interested in conservation, waterways improvement, shellfish, and others involved in the control of public waters.

The new laboratories will be in charge of Dr. Charles E. Renn, lately Associate Biologist of the Massachusetts Department of Public Health, Division of Sanitary Engineering, and Lecturer in Sanitary Biology, Harvard University.

#### MONTANA MAKES A PLAN

In April, 1946, Dr. B. K. Kilbourne became Executive Officer of the Montana State Board of Health. Shortly thereafter there was published by the State Board of Health "Public Health Services in Montana: Organization and Functions of County or District Health Units." In addition to a discussion of organization and functions, this bulletin reproduces the map of the suggested districting into health units of Montana as proposed in the volume *Local Health Units for the Nation*. It also includes Montana's 1945 enabling legislation for county and district health units and has a section each on Coöperation with other Agencies and on How is a County or District Health Unit Obtained?

#### LOCAL HEALTH UNITS FOR THE NATION IN THIRD PRINTING

The Commonwealth Fund reports that the second printing of *Local Health Units for the Nation* is so nearly exhausted that a third printing of 2,000 copies has been ordered. Up to the

end of September, 1946, nearly 3,000 copies had been distributed.

The volume is available at \$1.25 through the Association's Book Service.

#### HEALTH EDUCATION FELLOWSHIPS

The U. S. Public Health Service has just announced that sixteen fellowships in health education have been allocated from funds made available to the Public Health Service from the National Foundation for Infantile Paralysis. In making this announcement Surgeon General Thomas Parran of the U. S. Public Health Service said that nine states and Puerto Rico were represented by the individuals.

In addition to nine months of academic study, each student will have three months of field training in a health department under supervision of a public health educator. Upon satisfactory completion of the year's work, a Master's degree in Public Health Education will be granted.

The awards made this year bring to a total of 57 those who have received this distinction since they were made available in 1944. The winners of this year's award were selected from a total of 200 candidates who applied for consideration to the Training Committee on Public Health Education of the U. S. Public Health Service.

#### CUTTER LECTURE

The Harvard School of Public Health announces that Sir Lionel Whitby, Regius Professor of Physic in the University of Cambridge, England, will deliver the Cutter Lecture on Preventive Medicine on November 6, 1946, at 5 p.m. in Amphitheatre D of the Harvard Medical School. Sir Lionel Whitby has chosen as his subject, "The Hematological Effects of Irradiation." The Cutter Lectures on Preventive Medicine have been held since 1912, according to the terms of the will of Dr. John Clarence Cutter, of the class

of 1877, which directed that they should be "free to the medical profession and to the press." In addition, medical and public health students and others interested are cordially invited to attend.

#### MENTAL HYGIENE PROGRAM IN CALIFORNIA

The California State Board of Health will establish a mental hygiene program in the department and will organize demonstrations in preventive mental hygiene service in local departments. A psychiatric consultant will be added to the Division of Preventive Medicine to develop the program. Through in-service training demonstrations and lay and professional education, it will attempt to make mental health and psychiatric principles a part of public health and medicine. The new project is made possible by a two year grant from the Commonwealth Fund of New York with the possibility that the period may be extended.

#### INTERDEPARTMENTAL COMMITTEE TO COÖRDINATE MEDICAL TRAINING FILM PRODUCTION

An announcement has been made by the U. S. Public Health Service, the Veterans Administration and the War and Navy Departments that an Interdepartmental Committee for the Co-ordination of Medical Training Film Production has been established. The committee aims to develop production facilities and programs in such a manner as to eliminate unnecessary duplication of effort. All visual aids to be produced are classified under a few headings, each representing a general field of knowledge pertinent to medicine and public health. Certain agencies possess facilities and subject material suitable for each field of knowledge and the appropriate agency is designated by the committee in each instance to produce the aid required.

It is stated to be the aim of the committee to make available in the future for loan to suitable groups motion pictures or other visual aids as far as possible within the legal limits imposed on each visual aid produced. A meeting of the interdepartmental group was held in Washington September 12.

#### GORGAS MEDAL AWARDED TO BRIGADIER GENERAL KELSER

The Gorgas Medal, sponsored by Wyeth, Inc., of Philadelphia, and awarded annually by the Association of Military Surgeons of the United States for outstanding work in preventive medicine, will go this year to Brigadier General Raymond A. Kelser. General Kelser, who served as Director of the Veterinary Division of the Surgeon General's Office during World War II, is being honored for his work in eradicating rinderpest, a disease of cattle, in the Philippine Islands, making it possible for Filipinos to have their own domestic milk supply.

General Kelser is now Dean of the School of Veterinary Medicine at the University of Pennsylvania in Philadelphia. He is Chairman of the Standard Methods Committee on Biology of the Laboratory Animal, of the Laboratory Section of the A.P.H.A.

#### NURSE RECRUITMENT DRIVE

National and local advertising support valued at several hundred thousand dollars has been donated during the past four months in behalf of a special campaign designed to alleviate the nation's critical nurse shortage, it was announced recently by the Advertising Council, New York.

The campaign, sponsored by the Council in cooperation with the Office of War Mobilization and Reconversion, and by nursing and hospital groups as well as Blue Cross Plans, has been aimed at filling the thousands of existing vacancies in schools of nursing

throughout the country in the belief that increasing the enrollment of student nurses will not only provide urgently needed help for many hospitals at this time but may also help in guaranteeing sufficient trained nurses in the period ahead.

The Council states that more than 100 leading radio programs on the four major networks carried special recruiting messages.

At the present time, nearly all of the 6,511 United States hospitals (not including Army, Navy, and Veterans' Administration hospitals) have patient waiting lists. In New York City alone, 2,000 beds were closed recently in municipal and private hospitals due to a lack of sufficient nursing personnel. As a result of the passing of a bill committing government expenditures of \$75,000,000 a year for a period of 5 years, plans for building new hospitals and health centers are now under way. Thousands of nurses will be needed to staff these new hospitals.

#### INSTITUTE FOR RESEARCH IN TROPICAL MEDICINE

A gift of \$250,000 for a new Institute for Research in Tropical Medicine to be established in Liberia was announced by Harvey S. Firestone, Jr., President of The Firestone Tire and Rubber Company at a banquet given by the Consul General of Liberia, Frederick A. Price, in New York, on September 19, commemorating the one hundredth anniversary of the independence of the Republic of Liberia. Guests included State Department and other government officials, foreign diplomats, and medical, educational and religious leaders.

The American Foundation for Tropical Medicine favorably received a proposal that it operate the new institute which will be erected and equipped with the Firestone gift. University members of the Foundation which will carry out



the work of the institute include: Harvard, Johns Hopkins, Stanford, Tulane, California, Southern California, Duke, Chicago, Michigan, the Long Island College of Medicine, and the New York University College of Medicine.

#### NEW YORK ACADEMY OF MEDICINE LECTURES TO THE LAITY

The New York Academy of Medicine has announced the Twelfth Series of Lectures to the Laity for 1946-1947 with the theme of "Medicine in the Postwar World." The program on October 31 included an address by Major-General Norman T. Kirk on "The Role of the Medical Man in War." Future sessions which have been scheduled are:

November 14—The Atom in Medicine—Arthur K. Solomon, Ph.D.

December 12—Are Parents Necessary?—Rene A. Spitz, M.D.

January 9—What the Wars' Experiences Have Taught Us in Psychiatry—Nolan D. C. Lewis, M.D.

January 23—American Pioneering in Psychiatry—Howard W. Haggard, M.D.

February 13—Anti-Infectious Agents of Natural Origin—Rene J. Dubos, Ph.D.

#### NEUROPSYCHIATRIC INSTITUTE AND WALTER HAYNES FOUNDATION CREATED

A Neuropsychiatric Institute has been created at the Medical College of Alabama in Birmingham to be located in the school's teaching hospital, the Jefferson and Hillman, which will house on one floor the newly formed Department of Neurosurgery, Neurology and Psychiatry and all patients of the Institute. Diagnostic, therapeutic, research, and teaching services of the Institute will be available to the profession at large. This Neuropsychiatric Institute has been made possible by the Walter Haynes Foundation, which will subsidize study and research in addition to the activities of the Institute. The Walter Haynes Foundation, for which

charter papers were filed July 8, was created by Dr. Walter Haynes, Professor and Chief of the newly created Department of Neurosurgery, Neurology and Psychiatry and Director of the Neuropsychiatric Institute. It aims to promote research, education, and training in the fields of neurosurgery and neurology as well as to subsidize the Institute.

#### PROFESSIONAL COMMITTEE ON CHEMISTRY AND TOXICOLOGY FORMED

The creation of a new professional Committee on Chemistry and Toxicology, headed by Henry F. Smyth, Jr., Ph.D., Senior Fellow of the Mellon Institute (Pittsburgh), has been announced by the Industrial Hygiene Foundation. Members of the new committee are:

Francis R. Holden, Ph.D., Pittsburgh, Committee Secretary

E. C. Barnes, East Pittsburgh

W. R. Bradley, New York

Warren A. Cook, Chicago

D. D. Irish, Ph.D., Midland, Mich.

F. A. Patty, Detroit

D. A. Russell, Youngstown

H. H. Schrenk, Ph.D., Pittsburgh

W. P. Yant, Sc.D., Pittsburgh

#### NEW YORK ACADEMY OF MEDICINE MEETING

The Committee on Public Health Relations of the New York Academy of Medicine is sponsoring a joint meeting of the New York Society for Medical History and the Section of Historical and Cultural Medicine of the New York Academy of Medicine to be held on November 8 at 8:30 p.m. in the Academy building at 2 East 103 Street.

James Alexander Miller, M.D., Chairman of the Committee on Public Health Relations will preside. A paper on "Eighty Years of Public Health in New York City" will be presented by Israel Weinstein, M.D., the Commissioner of Health, City of New York, and the discussion period will be led by Harry S. Mustard, M.D.

#### ORGANIZATION FOR MULTIPLE SCLEROSIS FORMED

The Association for the Advancement of Research in Multiple Sclerosis has been organized by a group of sponsors including Mrs. Wendell Willkie, William J. Norton, Secretary of the Children's Fund of Michigan, Senator Brien McMahon of Connecticut, and eight other business and professional men. Its purpose is to combat multiple sclerosis, a mysterious malady that affects the nervous system with crippling effects. Neither the cause nor the cure of this disease is known.

A membership drive is the first objective of the Association. By enrolling as many sclerosis sufferers as possible it hopes to determine the prevalence of the disease. At present there are no statistics giving the overall picture, although it is thought possible that "sclerosis victims may outnumber infantile paralysis sufferers."

The association will further coordinate research efforts, serve as a clearing house for information, educate the public on the problem, and provide funds to stimulate and support research.

The budget of the Association has been underwritten for two years by its sponsors. Its headquarters are at the New York Academy of Medicine, 2 East 103rd Street, New York. Chairman of the Board of Directors is Carl W. Owen of the law firm of Owen, Willkie, Otis, Farr and Gallagher. Honorary Chairman is Dr. Tracy Jackson Putnam, Director of Neurology and Neurological Surgery of the Neurological Institute in New York. Among its Medical Advisory Board of 20 are: Dr. Leo Alexander of Massachusetts State Hospital, Dr. Roger I. Lee, retiring President of the American Medical Association, Dr. Thomas M. Rivers, Director of the Hospital of the Rockefeller Institute for Medical Research, Dr. Ernest L. Stebbins, Dean of the School of Hygiene of Johns Hopkins

University, and Dr. Henry Woltman of the Mayo Clinic. The Board will be enlarged from time to time to include persons working directly in the field of sclerosis research.

#### ENVIRONMENTAL SANITATION PERSONNEL REQUIREMENTS

Public health engineers across the country are receiving questionnaires from J. Lloyd Barron, C.E., chairman of the Committee on Engineering Administrative Practice of the Conference of Municipal Public Health Engineers. He is seeking their proposals on the personnel, functions and costs of an ideal environmental sanitation division for various population levels. The purpose of the project is to obtain information needed to clarify organizational requirements in this field of public health.

#### DONATION TO ASSOCIATION LIBRARY

Through the generosity of Millard Knowlton, M.D., the Association is the recipient of several volumes of public health works that were formerly part of Dr. Knowlton's library. Included among the books are copies of the *American Journal of Public Health* from May, 1918, to June, 1919. Of particular interest are Volumes I and II of the *Journal of Health* for the years 1830 and 1831 published in Philadelphia. Volume I has a frontispiece of an engraving of Benjamin Rush, M.D., autographed by Dr. Rush.

#### APPOINTMENTS IN U. S. PUBLIC HEALTH SERVICE

Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, has announced several recent appointments of physicians. Among these are the designation of Dr. James A. Crabtree, Deputy Surgeon General, effective September 1; Dr. C. L. Williams, Chief, Bureau of State Services, and Dr. L. R. Thompson, Associate Chief, also effective

tive September 1; Dr. H. E. Hilleboe, Assistant Chief, Bureau of State Services, effective September 11, and Dr. W. Palmer Dearing, Chief, Division of Commissioned Officers, effective September 6.

Two newly created divisions have been announced, one the Research Grants Division, whose Chief is Dr. Cassius J. Van Slyke, whose appointment was effective August 12. The other is the Division of Hospital Facilities, of which the Chief is Dr. Vane M. Hoge, whose appointment was announced August 16.

#### DR. TURNER JOINS N.F.I.P. STAFF

The appointment of Clair E. Turner, Dr.P.H., formerly of the Massachusetts Institute of Technology faculty, Cambridge, Mass., as Assistant to President Basil O'Connor of the National Foundation for Infantile Paralysis, has been announced. Dr. Turner is well known in the field of health education, having recently served as Visiting Professor of Health Education at the University of California School of Public Health, Berkeley, as Chief Health Education Officer for the Institute of Inter-American Affairs, and as Consultant for the Illinois and Kansas State Departments of Health.

#### OKLAHOMA STATE FAIR EXHIBITS

##### MODEL LOCAL HEALTH UNIT

A scale model of a local health department set-up was the key exhibit of the State Health Department at the Oklahoma State Fair in September. The work of a well planned city, county, or city-county health unit was divided into nine categories: maternal and child health, nursing, nutrition, sanitary engineering, laboratory, communicable disease, health education, preventive dentistry, and vital statistics. The display was prepared in answer to a number of requests from municipal organizations that are interested in

building such units under the provisions of the federal Hospital Construction Act.

#### UNIVERSITY OF MINNESOTA EXPANDS SCHOOL OF PUBLIC HEALTH STAFF

Gaylord W. Anderson, M.D., Dr.P.H., Mayo Professor and Director of the School of Public Health, University of Minnesota, Minneapolis, has announced the following new appointments and promotions in the School of Public Health:

The appointment of Margaret Taylor, R.N., as Associate Professor of Public Health and Director of the Course in Public Health Nursing. Miss Taylor will succeed Ruth Freeman who has joined the staff of the American Red Cross in Washington. She will begin her appointment effective January 1 from her present position as Chief Consultant Nurse in the Tuberculosis Program of the U. S. Public Health Service, Washington. Formerly Miss Taylor was Director of the course in public health at the University of Buffalo.

The appointment of James Hamilton as Professor of Hospital Administration on a part-time basis. Mr. Hamilton has been superintendent of hospitals in Cleveland and New Haven and is a past President of the American Hospital Association and of the American College of Hospital Administrators. He will continue his work in hospital consultation.

The appointment of James Stephan as Associate Professor in Hospital Administration. Mr. Stephan is a graduate of the course in hospital administration at the University of Chicago and has been connected with hospitals in Cleveland and New Haven. He is now Superintendent of the Aultman Hospital in Canton, Ohio. His appointment is effective January 1.

The promotion of Theodore A. Olson from Assistant Professor to Associate. Mr. Olson has been with the School of

Public Health for Several years in connection with courses in sanitary biology and public health entomology.

YEAR'S TOTAL OF \$700,000 FROM LIFE  
INSURANCE MEDICAL RESEARCH  
FUND

Additional grants in September by the Life Insurance Medical Research Fund brings its allocation of research funds during the first year of its existence to almost \$700,000. The September grants included eight post-graduate and three junior fellowships and three grants-in-aid to universities. The fellowship awards bring the total number to 20, representing \$55,800. The 20 fellows come from 11 states and 2 Canadian provinces, and will engage in medical research at 17 different institutions. Grants-in-aid for research amount to \$633,600 for a total of 55 projects.

The Fund is supported by 149 insurance companies in the United States and Canada. All its sponsored research is devoted at present to cardiovascular diseases, the most prevalent single cause of death. In reporting the recent awards, Dr. Francis Dieuaide, Scientific Director, announced that applications for 1947 research fellowships will close on January 1, 1947, for grants-in-aid to be made on January 31.

For additional information about the Fund, see 1946 *Journal*, pages 581 and 952.

HOUSTON IMMUNIZATION PROGRAM

The City of Houston, Texas, Board of Education passed a school law effective September 1, 1946, which reads as follows:

Effective as of the beginning of the next scholastic year, September 1, 1946, as a prerequisite to the entrance, for the first time, into the schools within Houston Independent School District by any child or children under the age of ten (10) years, such child or children shall have received the current approved immunization for diphtheria, or a negative

Schick test within twelve months before entering school, and proper evidence thereof shall be furnished by either such child, children, or their parent or parents or guardians, as the case may be.

This law was passed at the request of the local Board of Health. During the month of August, 155,000 stuffers went to citizens throughout the metropolitan area in their light bills warning them that the diphtheria school law would go into effect at the opening of school this year. As a result more than 10,000 very young school children were immunized and thousands of preschool children.

MITE ON MICE CAUSES MYSTERIOUS  
FEVER

A hitherto unknown type of spotted fever, affecting nearly 100 persons in Queens Borough of New York City during the past summer, was identified recently as a new disease spread by the bite of a mite that lives on the bodies of mice. The disease is characterized by fever and rash, with recovery of all cases within 2 weeks. It has been named "rickettsial pox." The discovery was made in the Washington laboratories of the National Institute of Health by Drs. Charles Armstrong and Robert J. Huebner of the U. S. Public Health Service. Dr. Armstrong is Chief of the Division of Infectious Diseases of the Institute. The assistance of the Service in diagnosing the disease was requested by the New York City Health Commissioner, Dr. Israel Weinstein.

The mite which spreads the disease, *Allodermanyssus sanguineus*, was found in storerooms and around incinerators of apartment houses in which the disease occurred. It lives on the bodies of mice and spreads the disease through its bite. The new disease follows the pattern of the other seven known rickettsias, depending upon the bite of an insect.

#### DR. E. S. ROGERS APPOINTED DEAN AT UNIVERSITY OF CALIFORNIA

According to a recent announcement, Edward S. Rogers, M.D., M.P.H., Assistant Commissioner for Medical Administration in the New York State Department of Health, Albany, has resigned to accept appointment as Professor of Public Health and Medical Administration and Dean of the School of Public Health of the University of California, Berkeley. Dr. Rogers has served as a member of the department staff for 11 years and has been Assistant Commissioner for 5 years. He is a graduate in medicine of the Harvard Medical School and in public health from the Johns Hopkins School of Hygiene and Public Health. His duties in California will begin in January, 1947, and in the interval he will study the routines in operation in other schools of public health. Dr. Rogers recently has served as Acting Chairman of the Subcommittee on Medical Care of the Committee on Administrative Practice, A.P.H.A., during the absence in Europe of the Chairman, Dr. J. W. Mountin.

#### PERSONALS

##### Central States

HERBERT M. BOSCH, M.P.H.,\* has been appointed Director of the Division of Sanitation of the Minnesota State Department of Health, effective September 16, succeeding H. A. WHITTAKER\* who has resigned to join the staff of the University of Minnesota.

ROBERT E. MATTISON, M.D., formerly of Minneapolis, has been named Assistant Director of the Division of Maternal and Child Health, Montana State Department of Public Health in Helena.

ORIANNA McDANIEL, M.D.,† of Minneapolis, retired July 1, ending 50 years of service to the Minnesota Department of Health. She joined the

board first as bacteriologist at the then newly established laboratory. After subsequent promotions, she was made Director of the Division of Preventable Disease in 1921, a position she has held since that time.

HERBERT MOORE † has been discharged after three years of service in the Sanitary Corps of the Army and has returned to his sanitary engineering practice in Milwaukee.

ANDREW NADY, M.D., of Calumet City, Ill., has accepted an appointment in the Department of Medicine and Surgery, Veterans Administration and has assumed the duties of Chief of Tuberculosis Section, Veterans Administration Hospital, Tucson, Ariz. Dr. Nady had been Tuberculosis Control Physician, State of Illinois, since April 1, 1944, and served as Assistant Medical Director of the Tuberculosis Hospital at Oak Forest, Ill., from 1940 to 1944.

#### CHANGES IN HEALTH PERSONNEL IN INDIANA:

ROBERT C. ROGERS, M.D., has resigned as Health Officer of Bloomington.

MARTHA A. O'MALLEY, M.D., M.P.H.,\* of Waukon, Ia., has been named Director of the Division of Hospital and Institutional Services of the Indiana State Board of Health.

RICHARD K. SCHMITT, M.D., has been named Health Officer of Columbus, succeeding the late Louie R. Crabtree, M.D.

##### Eastern States

JOSEPH H. BUNZEL † has resigned from the Pittsburgh, Pa. Housing Association to become Associate Professor of Sociology at Fisk University, Nashville, Tenn., where he will continue interest in public health, with particular reference to housing.

HOWARD REID CRAIG, M.D., has been

appointed Director of the New York Academy of Medicine, effective October 1, succeeding HERBERT B. WILCOX, M.D., who has resigned. Dr. Wilcox has been Director since 1939.

LYMAN C. DURYEA, M.D.,† has been appointed Medical Director of the Research Council on Problems of Alcohol. He has been most recently Medical Director of the Veterans Administration in the State of New York. Previously, Dr. Duryea served as the Director of the Division of Physically Handicapped of the New York City Department of Health. During World War II, he was Assistant Surgeon of the Second Service Command at Governor's Island, N. Y., serving with the rank of Colonel up to December 29, 1945.

WARFIELD GARSON, M.D., Assistant Surgeon of the Field Study Section of the Tuberculosis Control Division of the U. S. Public Health Service, has been appointed Associate Research Specialist in the Department of Microbiology at Rutgers University, New Brunswick, N. J. Dr. Garson will work with SELMAN A. WAKSMAN, PH.D., Professor of the department, and the work will be directed toward the isolation of antibiotics particularly active against the tubercle bacillus.

JOSEPH HIRSH† has been appointed Associate Director of the Research Council on Problems of Alcohol in charge of Education and Public Relations. Prior to coming to the Council, Mr. Hirsh had served first as Field Director of Public Relations, then as Director of Medical Administration of the Veterans Administration for the hospitals and clinics in the State of New York.

ALICE B. KLINE,† home economist, has been added to the Public Rela-

tions Department of the General Foods Corporation in New York, in line with the company's policy of interpreting and bringing to the public essential information on foods and food research. Miss Kline has been associated with the Connecticut Dairy and Food Council.

BERWYN F. MATTISON, M.D.,† resigned August 31 from the position of District State Health Officer in charge of the Kingston area, New York, to assume the duties of Commissioner of Health of the city of Yonkers.

HENRY N. PRATT, M.D.,† has been appointed Administrator of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York, a new position created because of the expansion program of the hospital. Dr. Pratt has been instructor in pediatrics at Harvard Medical School, Boston, since his release from army service.

HOWARD A. RUSK, M.D.,† wartime Head of the Army Air Forces Convalescent Services Program, will be in charge of a new Department of Rehabilitation and Physical Medicine at the New York University School of Medicine. Dr. Rusk will continue as Associate Editor of *The New York Times* and Consultant in Medical Rehabilitation to the Medical Director of the Veterans Administration. The new department is an expansion of a Division of Physical Medicine set up last year under a grant of \$250,000 from the Baruch Committee on Physical Medicine and will work closely with the City's Department of Hospitals in establishing and supervising rehabilitation programs in all city hospitals.

FRANCIS H. SLEEPER, M.D., of Boston, Assistant to the Commissioner of Mental Health in Massachusetts, has been appointed Superintendent of the Augusta State Hospital and Con-

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

sultant on Hospitals and Mental Health to the Maine Department of Institutional Service, effective September 1, succeeding FORREST C. TYSON, M.D., who has retired.

JOHN B. WILBUR, Sc.D., Acting Head of the Department of Civil and Sanitary Engineering, Massachusetts Institute of Technology, has been appointed Head of that Department. Dr. Wilbur was also Professor of Structural Engineering prior to this appointment.

#### Southern States

W. PALMER DEARING, M.D.,\* has recently been appointed Chief of the Division of Commissioned Officers in the U. S. Public Health Service, with the rank of Medical Director. Dr. Dearing came to the Division of Commissioned Officers in May, 1946, from the Division of Public Health Methods where he had served as Deputy Chief. During the war, he served first as Assistant and later as Chief Medical Officer of the U. S. Office of Civilian Defense. He has also served as personnel officer for the Health Division of UNRRA.

HERMAN E. HILLEBOE, M.D., M.P.H.,\* has recently been appointed to the newly created post of Assistant Chief, Bureau of State Services, U. S. Public Health Service. He will continue to discharge his regular duties as Chief of the Tuberculosis Control Division.

JOHN EDWARD OFFNER, M.D.,† has resigned as State Health Commissioner of West Virginia, effective September 1. He has been succeeded by NEWMAN HOUGHTON DYER, M.D., a practising physician of Bartley, W. Va. Dr. Dyer will soon complete his work for the degree of M.P.H. at the University of Michigan School of Public Health. He served as a member of the West Virginia Governor's

Advisory Committee to the Legislative Interim Committee to study public health problems.

WILLARD H. WRIGHT, D.V.M., Ph.D.,\* Chief, Division of Zoology, National Institute of Health, U. S. Public Health Service has been awarded the Legion of Merit for his actions in leading a field party into the zone of military operation in Mindanao and discovering two new regions in which schistosomiasis is prevalent.

#### CHANGES IN HEALTH PERSONNEL IN VIRGINIA:

L. J. ROPER, M.D.,\* was appointed State Health Commissioner on September 1, succeeding I. C. RIGGIN, M.D., resigned. Before his appointment to his new position Dr. Roper served as Director of Local Health Administration in the Virginia State Department of Health.

WILLIAM Y. GARRETT, M.D.,† of Eastville, has been named Health Officer of the Norfolk-Princess Anne Health District, succeeding JOHN M. JACKSON, M.D., Manassas.

THOMAS SCARLETT, M.D., formerly Health Officer of Augusta-Rockingham-Harrisonburg Health District, recently returned from medical service in the army, has been assigned as Health Officer of the Fairfax County Health Department, effective May 1.

WILLARD W. GRIGGS, M.D., has resigned as Health Officer of the Page-Warren-Shenandoah Health District, effective May 13.

GEORGE R. CARPENTER, M.D.,† recently returned from duty in Austria, has been appointed Director of the State Bureau of Cancer Control.

SAMUEL C. INGRAHAM, II, M.D., of Richmond, recently released from his duties with the Tuberculosis Division of the U. S. Public Health

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

Service, has been appointed Director of the Tuberculosis Outpatient Service and Crippled Children's Bureau.

THOMAS F. MCGOUGH, JR., M.D.,† of Pulaski, recently released from medical services with the army, has been appointed Health Officer of the Peninsula Health District.

HARRY E. JENKINS, M.D., recently released from service in the navy, has been appointed Health Officer of the Southside Health District of the Virginia Department of Health.

CHARLES G. SOUDER, M.D., D.P.H.,† previously with the Navy and latterly with the American Red Cross, has been appointed Health Officer of the Loudoun County Health District.

SAMUEL S. SHOUSE, M.D., formerly Health Officer of Page-Warren-Shenandoah Health District and recently released from service in the Navy, has been appointed Health Officer of the Charlotte County Health District.

#### Western States

J. C. GEIGER, M.D.,\* Director of Public Health, City and County of San Francisco, Calif., recently was presented with an illuminated scroll from the staff of the Department of Health in recognition of his completion of 15 years as Director of Health and for his distinguished leadership in the department.

FRANCIS I. LIVINGSTON, D.D.S., M.S. P.H., resigned in September as Head of the Dental Hygiene Section, Washington State Department of Health, Seattle, to accept the position of Director of the Dental Division, Montana State Board of Health, Helena, as of October 1.

FRED LOE, M.D., has been appointed Secretary of the Nevada State Board of Health, effective September 1, suc-

ceeding EDWARD HAMER, M.D.,† deceased. Dr. Loe served with the U. S. Indian Service from 1914 to May, 1946.

FRANCIS L. MCPHAIL, M.D., of Great Falls, has been elected President of the Montana Public Health Association.

#### Canada

G. D. W. CAMERON, M.D., D.P.H.,\* has been appointed Deputy Minister of Health in the Department of National Health and Welfare of Canada succeeding G. BROCK CHISHOLM, M.D.,† who has retired to serve as Executive Secretary of the Interim Commission of the World Health Organization. Since the fall of 1945, Dr. Cameron had been the Department's Director of Health Services and was previously Chief of the Department's Laboratory of Hygiene.

E. C. CRITTENDEN was presented with the Illuminating Engineering Society 1946 Gold Medal at their Convention in Quebec on September 19 for his work as "an effective worker and leader in its technical activities, especially those related to nomenclature, standards, units and measurement of Light."

#### Foreign

A. FERNOS-ISERN, M.D.,† who has served for the last 5 years as Commissioner of Health in the Insular Department of Health, Puerto Rico, has resigned to accept appointment as Resident Commissioner for Puerto Rico in Washington, D. C. ANGEL M. MARCHAND, M.D., M.P.H.,† is Acting Commissioner of Health for the present.

COL. ARTHUR R. HARRIS of the U. S. Army, became President of The Institute of Inter-American Affairs and the Inter-American Educational Foundation on August 6. He has



spent considerable time as Military Attache to the Latin American Republics and last served in Argentina from June, 1945, to March, 1946.

HENRY R. O'BRIEN, M.D.,\* Senior Surgeon (R), U. S. Public Health Service, has completed a tour of duty with UNRRA in which he saw service in the Middle East, Australia, the Philippines, Malaya and Shanghai. He is now in Washington with the Office of International Health Relations, U.S.P.H.S., where he is especially concerned with educational schedules for foreign public health workers and physicians visiting the United States.

### Deaths

JAROSLAV DRBOHLAV, M.D., D.P.H.,† former Rockefeller Fellow, known for his work on amebiasis, tularemia and malaria, died recently at the age of 53 years in Prague, Czechoslovakia. Dr. Drbohlav has served as Head of the Diagnostic Service of the Czechoslovak Health Institute and Vice-President of the American Institute of Prague and most recently as Assistant Professor of Bacteriology at the Charles University in Prague.

LOUIS MARTIN, M.D., Honorary Director of the Pasteur Institute, died in Paris, June 13.

WILLIAM C. WELLING,\* Director of the Bureau of Vital Statistics of the Connecticut State Department of Health, died on August 19.

### CONFERENCES AND DATES

American Academy of Allergy—Annual Convention. Hotel Pennsylvania, New York, N. Y. November 25-27.

American Public Health Association—74th Annual Meeting. Headquarters—Public Auditorium, Cleveland, O. November 12-14.

Meetings of related organizations, November 11:

American School Health Association

Association of Maternal and Child Health Directors

Association of Reserve Officers of the U. S. Public Health Service

Conference of Municipal Public Health Engineers

Conference of Professors of Preventive Medicine

Conference of State Directors of Health Education

Conference of State Sanitary Engineers

Conference of State and Provincial Public Health Laboratory Directors

Council of State Directors of Public Health Nursing

National Advisory Council of Cleveland Health Museum

National Committee of Health Council Executives

Public Health Cancer Association

American Public Welfare Association—Annual Round Table. Baltimore, Md. December 5-8.

American Water Works Association—

New Jersey Section—Chelsea Hotel, Atlantic City, N. J. November 7-9.

Virginia Section—John Marshall Hotel, Richmond, Va. November 14-15.

Wisconsin Section—Northland Hotel, Green Bay, Wis. November 15-17.

North Carolina Section—Hotel Carolina, Raleigh, N. C. November 18-20.

Cuban and Florida Sections—Joint Meeting. Havana, Cuba. November 22-24.

Industrial Hygiene Foundation of America, Inc. Pittsburgh, Ill. November 7.

National Dairy Council. Atlantic City, N. J. January 29-31, 1947.

National Society for Crippled Children and Adults. Chicago, Ill. December 9-11.

National Society for the Prevention of Blindness—Conference. Hotel Pennsylvania, New York, N. Y. November 25-27.



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# American Journal of Public Health and THE NATION'S HEALTH

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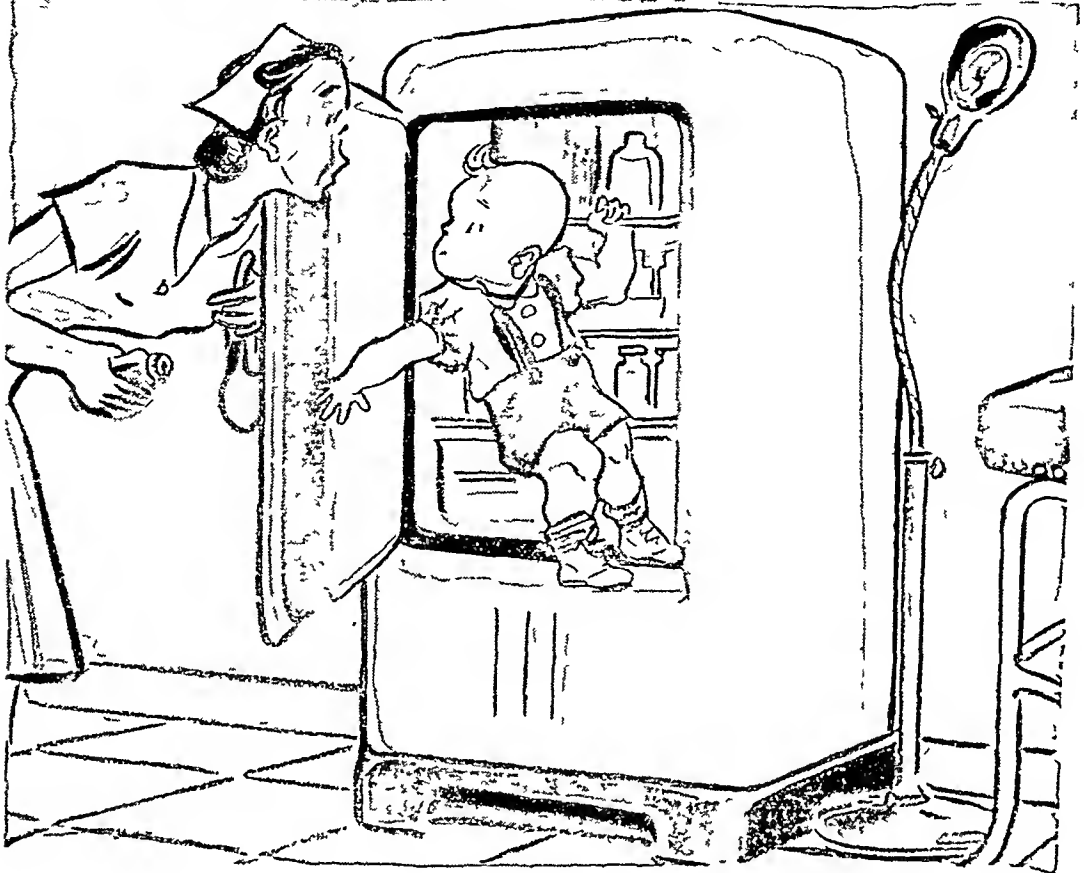
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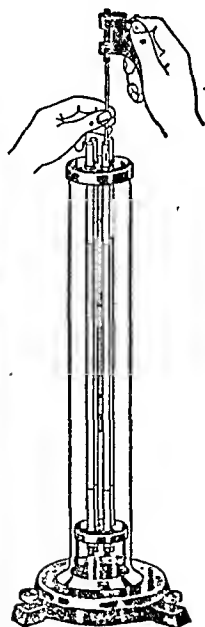
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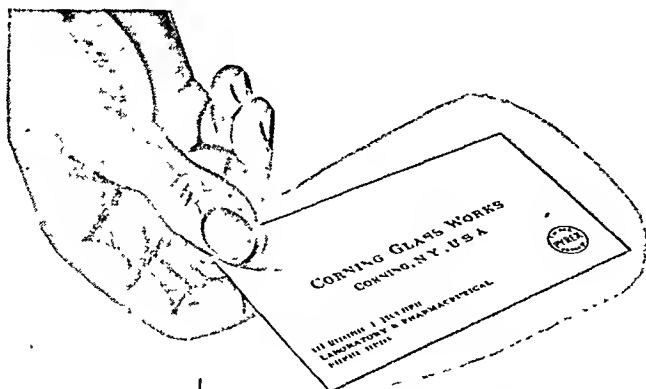
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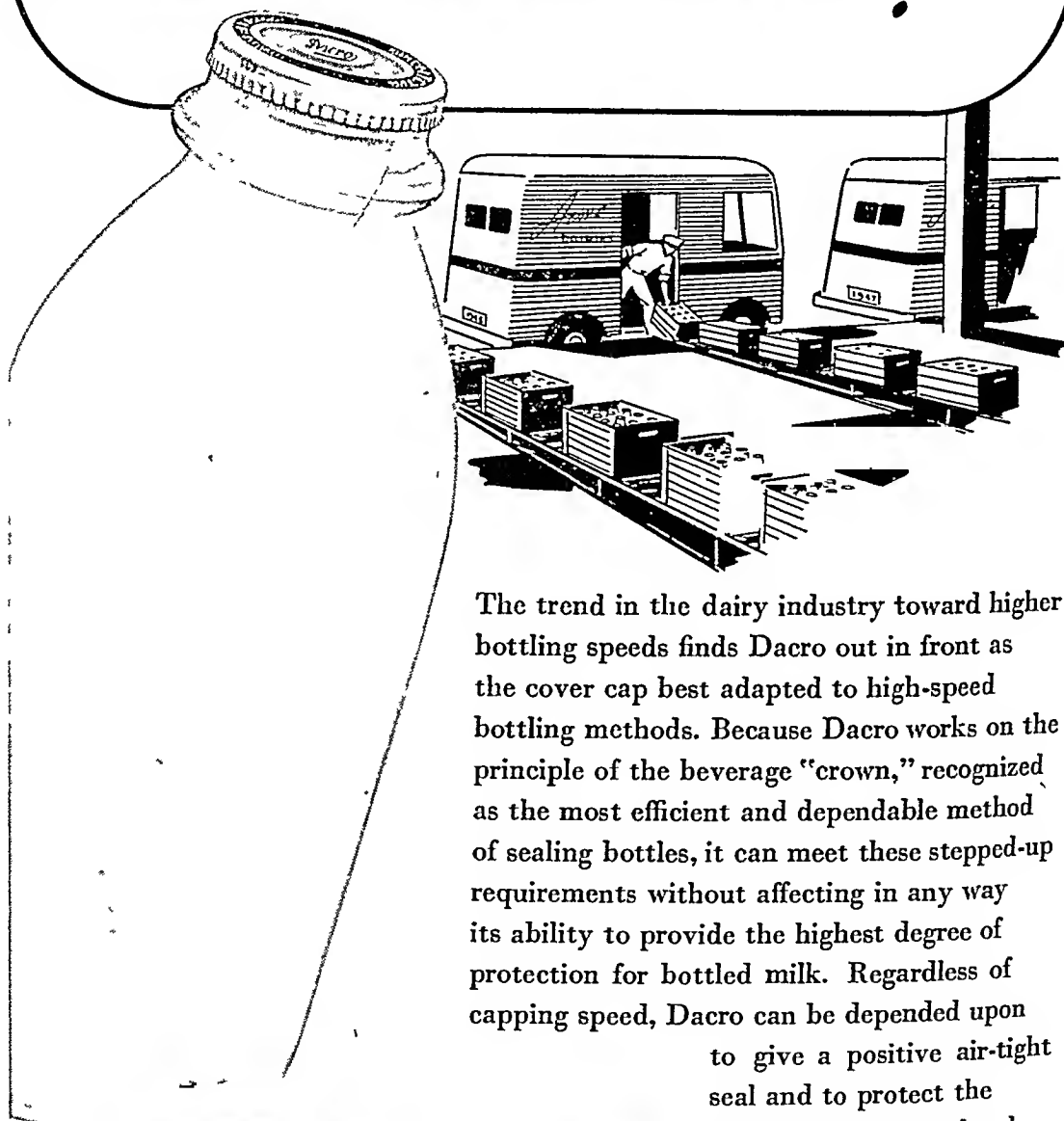


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- The Commission on Influenza, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the Army, Preventive Medicine Service, Office of the Surgeon General, United States Army: A clinical evaluation of vaccination against influenza. J.A.M.A. 124: 982 (Apr. 1) 1944.*
- Francis, T., Jr.: The development of the 1943 vaccination study of the Commission on Influenza. Am. J. Hyg. 42: 1 (July) 1945.*
- Rickard, E. R.; Thigpen, M., and Crouley, J. H.: Vaccination against influenza at the University of Minnesota. Am. J. Hyg. 42: 12 (July) 1945.*
- Hale, W. M., and McKee, A. P.: The value of influenza vaccination when done at the beginning of an epidemic. Am. J. Hyg. 42: 21 (July) 1945.*
- Hirst, G. K.; Plummer, N., and Friedewald, W. F.: Human immunity following vaccination with formalinized influenza virus. Am. J. Hyg. 42: 45 (July) 1945.*
- Salk, J. E.; Menke, W. J., Jr., and Francis, T., Jr.: A clinical, epidemiological and immunological evaluation of vaccination against epidemic influenza. Am. J. Hyg. 42: 57 (July) 1945.*
- Eaton, M. D., and Meiklejohn, G.: Vaccination against influenza. A study in California during the epidemic of 1943-44. Am. J. Hyg. 42: 28 (July) 1945.*

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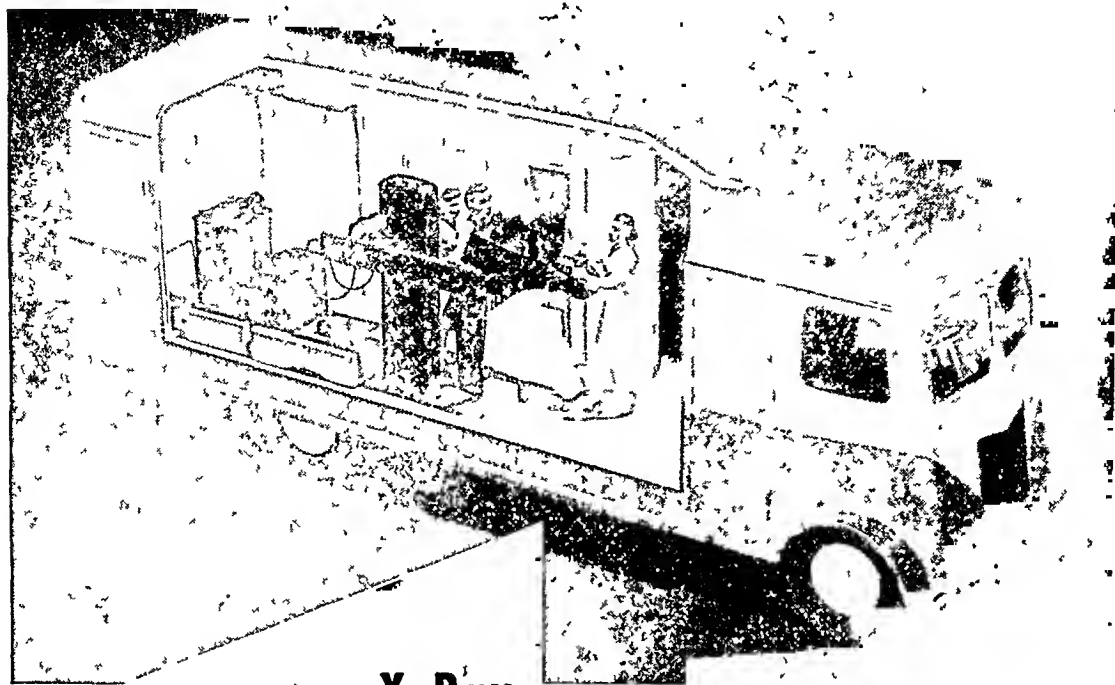
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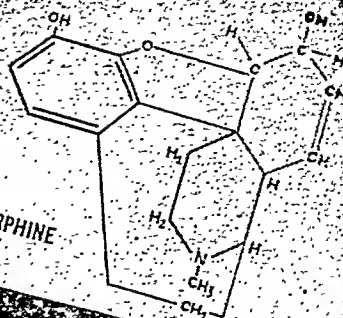
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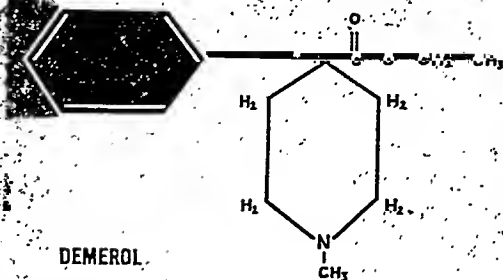


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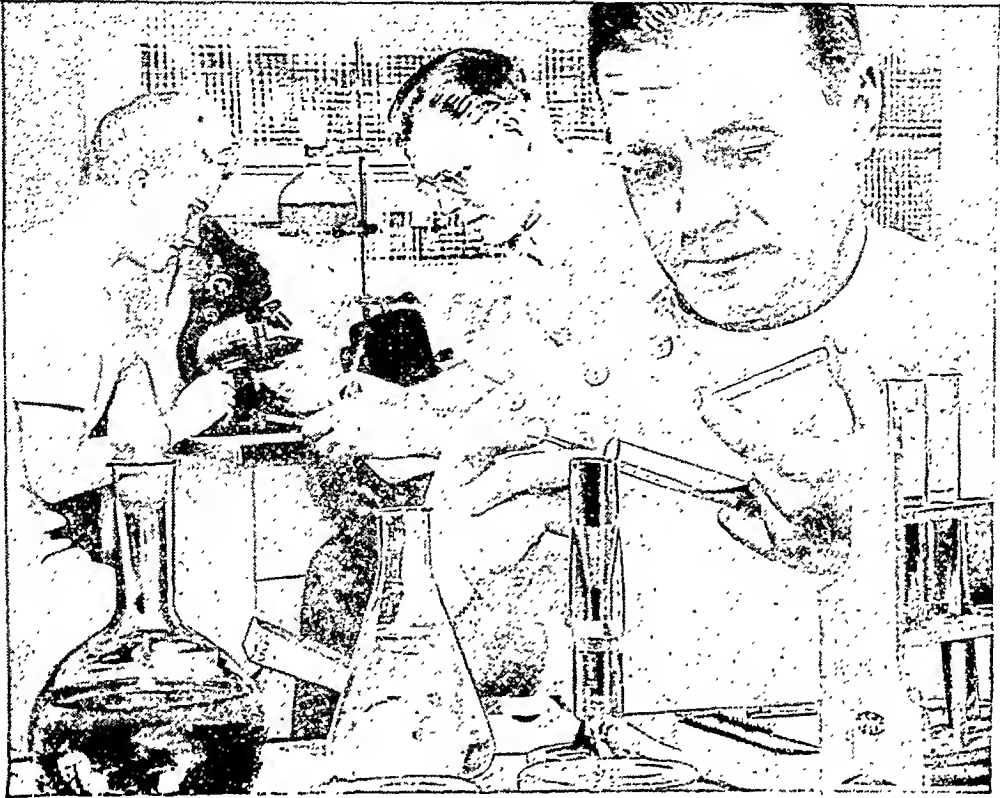
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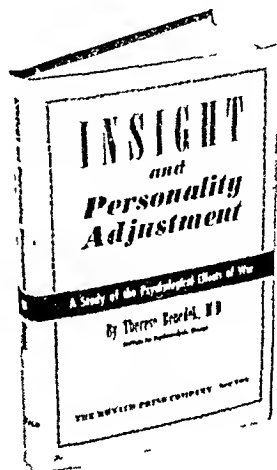
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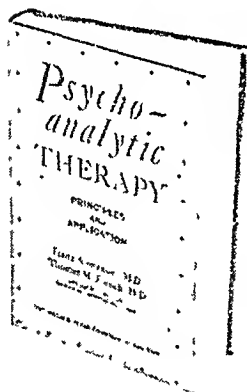
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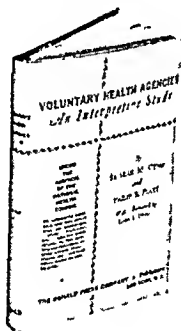
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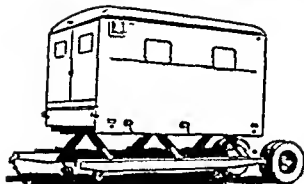
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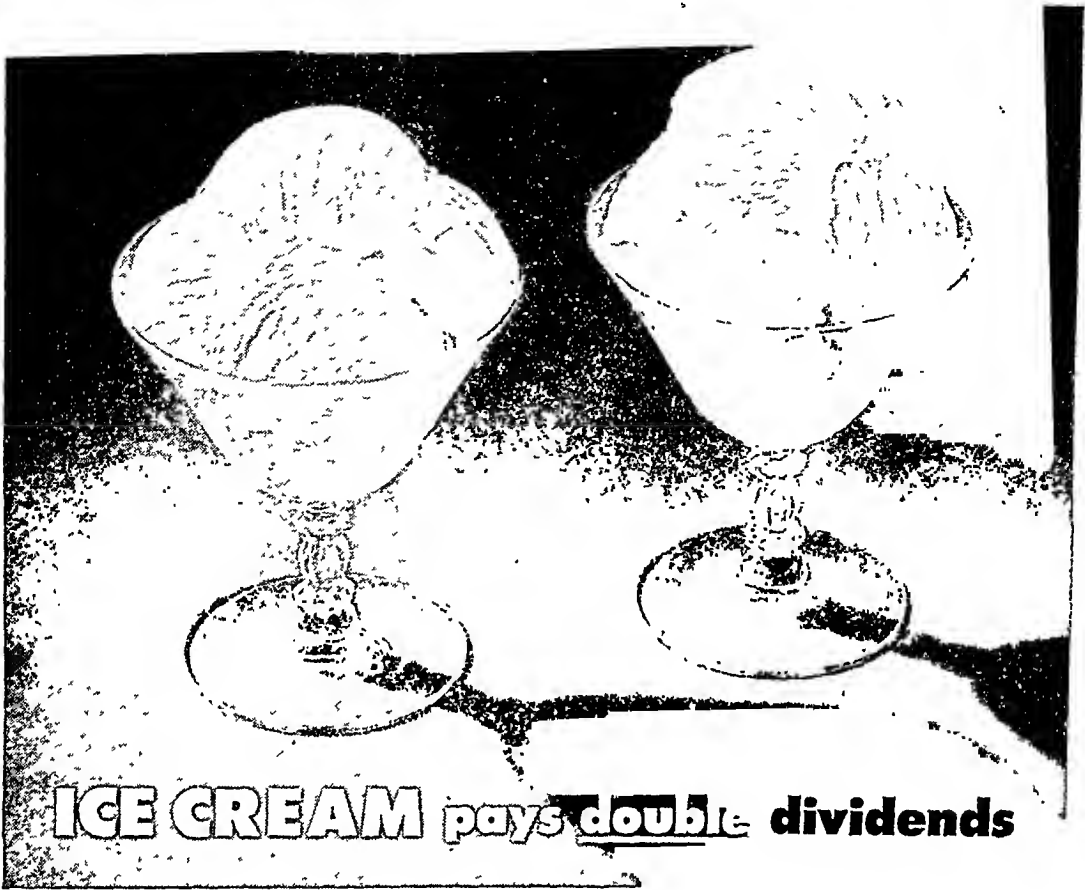
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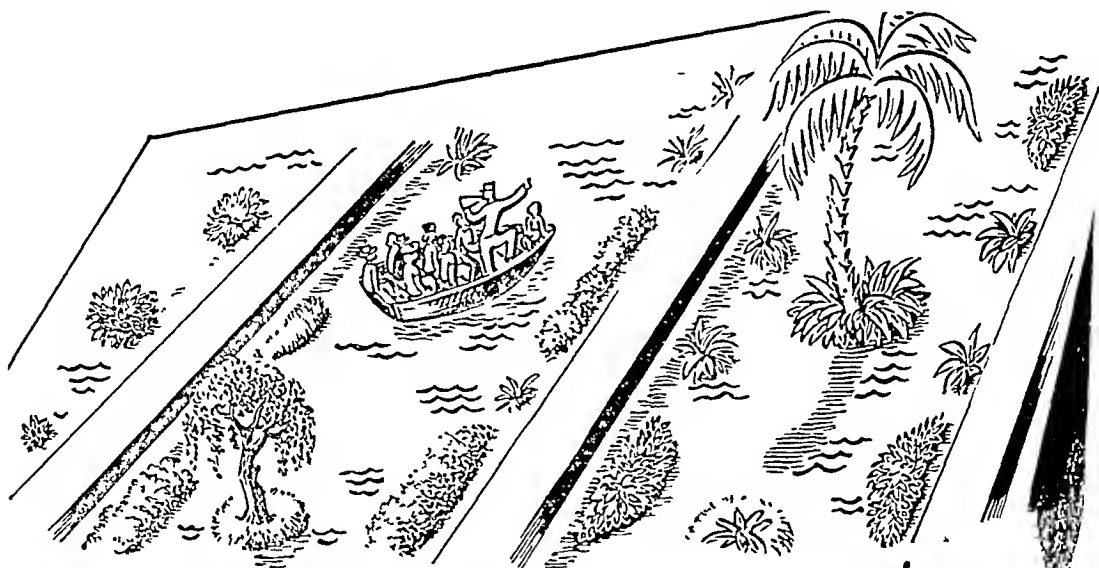
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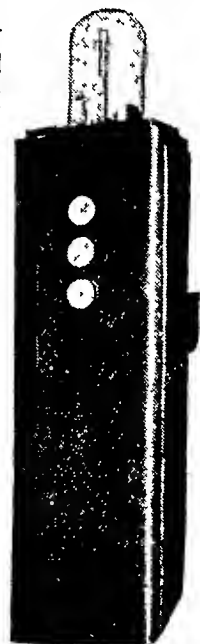
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## Use of Body Measurements in the School Health Program\*

Part I. General Considerations and the Selection of Measurements

HAROLD C. STUART, M.D., F.A.P.H.A., AND  
HOWARD V. MEREDITH, PH.D.

*Department of Maternal and Child Health, Harvard School of Public Health,  
Harvard University, Boston; and Iowa Child Welfare Research  
Station, University of Iowa, Iowa City*

**B**ODY measurements may serve useful purposes as adjuncts to the medical examinations of school children. To fulfil such ends, however, they must be carefully taken and soundly interpreted in conjunction with other findings and in relation to what is known regarding normal occurrences. Without attention to these provisions, measuring children at school is a waste of time and may lead to unsound conclusions and unfortunate recommendations.

The principal purposes served by measurements have to do with appraisal of the physical state of the child at the time they are taken, and with the evaluation of his growth during the periods between examinations. In the former instance, measurements reinforce the physician's clinical observations as to the child's size, build, muscular development, and probable nutritional

state. They help him to recognize the gross physical attributes in which a given child is unusual, and to record in relatively precise terms to what degree he deviates in these respects. Even if a child is not markedly atypical, it is possible to record the type of child he is with respect to size and build by relating his measurements to the normal range of individual variations encountered at his age. This kind of information may not have any special significance when first obtained, but it may become very helpful at subsequent examinations when compared with new data in leading to the recognition of unusual progress in growth.

Medical interest in recognizing that a child is small or thin or in other respects below what is characteristic for his age arises from the fact that in some instances these are the results of failure to make normal progress according to the individual's constitutional

\* Special Review Article prepared at the request of the Editorial Board.

potentialities for growth. It does not follow, of course, that small size or slender build is *necessarily* an undesirable finding from the standpoints of health and fitness. In a parallel manner, the finding that a child is unusually large or otherwise advanced in development should attract attention because this *may* indicate rather special needs for the maintenance of optimum health. A clinician who has had extensive experience in the examination of children not infrequently becomes quite proficient at recognizing without the aid of measurements those children who are physically retarded or under par as well as those who are advanced or unbalanced in development. However, without the aid of measurements he cannot record these observations with sufficient precision to be able at a later date to show whether the child has or has not kept pace with expected progress or regained formerly lost ground.

Intensive studies during recent years have added considerably to our knowledge of how children grow and how individual members of any group may be expected to differ in body size, build, relative amounts of the different tissues, and rates of growth over given age periods.<sup>1-3</sup> Although children of the same age and sex differ among themselves greatly in these respects, the characteristics of variability within any large group are easily describable. Since Baldwin's early study,<sup>4</sup> much evidence has accumulated showing that the progress of growth during the childhood years is sufficiently orderly so that most children tend to maintain their position with respect to the group in any given measurement from year to year.<sup>5</sup> During the adolescent years the pattern of the growth curve usually is quite similar for children who differ greatly in size, although it shows wide individual variation in the timing of the periods of acceleration and deceleration. One

of the authors has reported a major investigation on the growth of individuals during the adolescent years,<sup>6</sup> while the other author recently has reviewed the cumulative evidence to date pertaining to patterns of growth encountered in this period.<sup>7</sup> Familiarity with these studies should be extremely helpful to the physician charged with the responsibility of interpreting measurements.

Progress has not been so notable in developing reliable methods for determining the *causes* of variability in size, proportions, or growth progress. Measurements tell what a child is like and whether he has any unusual characteristics, but they do not tell why he is unusual. Furthermore, except in certain pathological instances (e.g., extreme deviations from the normal or typical syndromes of disease) much more knowledge is required relating to the immediate as well as the ultimate significance of atypical manifestations of size, build, and growth as these relate to health and physical fitness. Such light as can be thrown upon these questions at the present time comes only from a careful evaluation of measurements in conjunction with many other pertinent data derived from a comprehensive health history and thorough physical examination.

It is known that various environmental factors such as the nature of the diet, the habits of physical activity and the character and duration of certain illnesses may influence the progress of growth. It is the responsibility of the school physician to recognize, in so far as time and available methods permit, those children who may have been unfavorably affected by these environmental forces. In instances of suspected retardation, the factor or factors likely to have been involved should be thoroughly investigated and corrected to the fullest possible extent. In most cases the part played by one

or more of these can be determined only by noting the results obtained during periods of carefully maintained improvements in diet and hygiene. The use of body measurements in the follow-up of children whose regimes have been corrected may be of great value in revealing the effectiveness of such changes and thus in indicating whether constitutional or environmental factors were responsible primarily for the apparently inadequate development. With extreme variations, the endocrine balance deserves study and the child should be referred for careful medical appraisal and continuing observation.

When constitutional factors appear to explain small or large size, slender or stocky build, slow or rapid growth progress, interest in trying to change these characteristics may properly give way to attempts to organize the child's life on a basis of well poised acceptance of his traits and a regime suited to his particular needs. As this often requires guidance and provisions differing from those customarily adopted for children of his age, the findings become of interest to all the school personnel, and the understanding and coöperation of the latter will be required for best results.

Fortunately for our purposes the primary objective of the school health examination is to *discover* those children who are in poor or questionable physical health or nutritional state. The school physician is not charged with the task of undertaking intensive study in order to arrive at a final decision as to the significance to be attached to unusual or undesirable findings at examinations. His charge is to see that those children who might be well served by further investigation are recognized and referred elsewhere for this purpose. The problem in this connection, therefore, is to select the best available means for screening those children in any group who deviate sufficiently from

the normal course of human growth to justify further study for the purpose of assuring appropriate care. However, in those instances in which diet or regime are suspect as causes for poor progress, the school program can do much to foster improvement in these respects, and efforts to improve these are not to be deprecated on the grounds that their relation to the specific findings has not been proved.

The questions which arise as to the use of measurements in connection with school health examinations may be considered under the following headings:

The selection of measurements

Procedures to be followed in taking measurements

The interpretation of measurement results

Norms to be used in making interpretations

#### THE SELECTION OF MEASUREMENTS

It is important in a school program to keep the list of recommended measurements as short as possible and to avoid the inclusion of those which are technically difficult to obtain. However, the time actually required to take five or six of the more straightforward measurements is little more than for two or three and, if the value of this phase of the examination can be appreciably enhanced thereby, the taking of the greater number is justified.

The attributes which ordinarily should be revealed by measurements are overall body size in length and mass and the relative amounts of the three principal body tissues which determine total mass, i.e., stockiness of the bony skeleton, bulkiness of the musculature, and quantity of skin and subcutaneous tissue.

Measurements should reveal the magnitudes of these attributes at the time of examination, and their relative values in terms of normal expectancies. They should also reveal actual increases and relative rates of increase in terms of the normal variability in the speed or magnitude of growth.

The best single measurement for registering gross linear size and rate of linear growth during the school years is stature. It is necessarily determined as recumbent length until the child is able to stand erect, and it is somewhat more accurately determined at all ages in this manner, but it is more conveniently and sufficiently reliably obtained in the school situation as standing height. General mass and overall rate of growth in mass are best measured as body weight.

Height and weight have long been measured routinely in connection with school health examinations, and weight alone has been relied upon to reveal the appropriateness of mass for length without other than clinical attention to its component parts. Some of the methods recommended for interpreting these two measurements in relation to each other will be referred to, but before considering their use it is necessary to call attention to their limitations. It must be remembered that height is only one aspect of size, and that the stockiness or linearity of skeletal build is only one factor in determining body weight.

Furthermore, body weight does not differentiate between the amount of protoplasmic tissue and the amount of fat or water stored in these tissues; nor does it distinguish between relatively inert tissues, such as bone, and active protoplasmic tissues, principally muscle. It is important to recognize that heavy weight for height and age may be due in one case to stocky bones, in another to exceedingly well developed muscles, in a third to large accumulations of subcutaneous fat, and in a fourth to a relatively well balanced amount of all of these. When a change occurs in weight for height and age, it is important to know which of these tissues has changed sufficiently to bring this about. During the school years it is particularly important to recognize when

muscle development has not progressed satisfactorily or when loss of muscle tissue has occurred. These points require some elaboration in considering what measurements should be taken in addition to height and weight or, as an alternative, what clinical observations should be made before interpreting height and weight when other measurements are not obtained.

The stockiness of the bony skeleton is of interest in its own right, since it is one of the principal features of body build and since many of the characteristics of the physical growth of an individual are determined by the characteristics of build with which he is endowed. Moreover, it is of great importance in connection with the correct understanding of body weight. The appropriate weight for individuals of the same sex, age, and height, differs within very wide limits depending in large part upon the stockiness of the bony skeleton. It is unfortunately not possible to measure the stockiness of bones uninfluenced by overlying tissues except by means of x-ray photographs, for even in parts where muscles are small or absent, the amount of fat in the subcutaneous tissue affects the measurement obtained. However, pelvic breadth and chest circumference are two useful indicators of the degree of skeletal stockiness if allowance is made for unusual amounts of subcutaneous fat. Hence, pelvic breadth and chest circumference have been selected to supplement height in evaluating skeletal size and build, and are included among the measurements being recommended. However, the clinician must always take account of the influence of subcutaneous fat upon these measurements.

The size of the muscles has been referred to as an important attribute which must be taken into account both in its own right and for its proportionate influence on body weight. As in the case of the skeleton, the

musculature cannot be measured independently (e.g., free from the influence of variable amounts of bone and subcutaneous fat) except by x-ray. However, certain circumferences of the body vary principally with the amounts of muscle mass and subcutaneous fat, and the relative importance of the latter can be estimated clinically. Hence, the circumference of the calf has been added to the minimal list of recommended measurements. The shafts of the tibia and fibula in this region influence this measurement to a very small extent.

The quantity of subcutaneous tissue is an extremely important physical attribute, and a reliable measurement of this tissue would be very helpful. The quantity differs between the sexes and changes in a given sex with age in a very characteristic manner.<sup>8, 1, 2</sup> Furthermore, there are very persistent differences between individuals in the amount of this tissue customarily present, and the difference appears to be related in some measure to constitutional factors, among which type of build is undoubtedly an important one. Many aspects of growth, physical fitness and health appear to be related to the tendency to carry large or small amounts of subcutaneous tissue. In addition to these rather persistent characteristics, the amount of subcutaneous tissue depends to a considerable extent upon dietary habits and health occurrences and hence change in this amount may be an important indication of changes in nutritional state or in the storage and loss of fat or water in the tissues. Such change may less frequently suggest alterations in the activities of one or more of the endocrine glands.

Some years ago Franzen<sup>9</sup> recommended the use of a special spring caliper designed for measuring the thickness of the skin and subcutaneous tissue. This has not received general

acceptance but has been found by some to be a helpful adjunct to the developmental examination. It is the writers' view that it would not lead to desirable results to recommend the use of this instrument unless the school physician and his assistants were willing to take sufficient time to become skilled in its application. Alternatively, it is advocated that in the minimal program the physician appraise the amount of this tissue by the method described in a later section on procedures. He must then take his ratings on this attribute into account in interpreting each of the measurements recommended (except stature) and in making his final evaluation of body build and nutritional state. This recommendation is made in the belief that in attempting to cultivate his powers of clinical appraisal the physician will go further toward reaching sound judgments in this matter than if he places reliance upon a procedure which is subject to technical error and with the use of which he or his assistants may not have an opportunity to become thoroughly proficient.

In conclusion, the writers recommend that as a minimum routine of anthropometry seven determinations be made as part of school health examinations. These include the five measurements already selected, namely, body weight, standing height, hip width, chest circumference, and leg girth, and careful subjective ratings of the thickness of two selected folds of skin and subcutaneous tissue.

In making these recommendations the authors do not wish to imply that other anthropometric methods are not useful or do not have certain advantages. To extract the greatest possible information from measurements, they should be evaluated in several different ways, and the more measurements taken, the greater the possibilities for exact description of the individual. The problem is one of selection, and the

authors have concluded that in the usual school situation the procedures recommended are as few and as readily carried out as the objectives of anthropometry require and that they are as likely to lead to a proper interpretation of a child's physical characteristics as any of equal simplicity that have come to their attention. It is recognized that under some circumstances less must be attempted and under others more should be undertaken. It is not possible to review the extensive literature dealing with this subject, but a few different methods of anthropometry which have been strongly recommended or are in common use in schools will be mentioned.

For use of height and weight only the most commonly used method is to refer weight to the average weight for sex, age, and height on tables such as those devised by Baldwin and Wood,<sup>10</sup> and to note the percentage deviation from this average. Manual,<sup>11</sup> Steggerda and Densen,<sup>12</sup> and others have constructed similar tables for use with particular racial groups. Since this method considers only sex, age, and height as factors which influence weight, and since average values only are given, the method has obvious limitations in respect to the objectives reviewed above. Tables set up in the same manner but giving a range of weights for each height have been presented by Faber.<sup>13</sup> These have the advantage of reminding the users that there is no single ideal weight for individuals of the same sex, age, and height. Jackson and Kelly<sup>14</sup> have prepared graphs which serve much the same purposes as those presented by the writers in so far as these two measurements are concerned. They do not provide for as exact placement within the range. Use is made of both the standard deviation and percentiles to express variance. This may be confusing to persons without statistical training.

Wetzel<sup>15</sup> has prepared a grid which provides for plotting measurements of height and weight on two graphs constructed on different principles from any thus far recommended to reveal unusual trends of growth.\* Advanced mathematical training is required to understand the principles upon which this grid has been constructed, but any school assistant can quickly learn to

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\* The Wetzel Grid is designed to obtain from height and weight used conjointly evidence as to two distinct attributes of the child—the character of his physique or body build, and the rate or stage of his physical development. In the first graph, weight is plotted from the vertical and height from the horizontal scale, so that chronological age is not brought into the picture. A series of straight channels traverse this graph obliquely, each channel being designated by a letter. The left upper channels represent children of heavy, stocky build; the middle channels, children of more average build; and the lower right channels, thinner, lighter children. The line formed by the points representing repeated measurements of any child tends to follow one or other of the channels fairly consistently depending principally upon the child's physique or build. Wetzel states that this consistency is due to the fact that physique changes little during the school years. However, the first purpose of this graph is to recognize those children who move out of their appropriate channels because such occurrences are considered to reflect change in nutritional or health status. This implies that at any one examination channel position is determined both by build and by nutritional status, and the graph itself does not distinguish between them. Constancy in one channel is presumed to indicate that build is the predominant factor, whereas change of channel is strongly indicative that a nutritional or health factor is responsible. The graphs of two children, however, who remain continually in the same low right-hand channel may in one instance represent a well nourished, narrow-build child, and the other a chronically malnourished, average build child. The physician must determine by other means whether skeletal build, muscular development, or the amount of subcutaneous fat is the principal factor accounting for unusual channel position.

The second feature of the first graph on this grid is that transverse "developmental lines," which are numbered cross the lines forming the channels at intervals which represent equivalent developmental progress. Hence the developmental line reached by an individual's growth line represents his developmental level, and the distance covered in a given time is taken to be indicative of his rate or speed of development. In order to consider this developmental level in relation to chronological age, a second graph provides for plotting the developmental level from the vertical and the age from the horizontal scale. The curve formed for the individual on this graph is referred to as his "auxodrome." The background of this graph shows several curves which represent various percentiles in the normal distribution of "auxodromes." One may thus recognize whether an individual's developmental level is high or low in the normal distribution for age, and more particularly when the rate of his development becomes unusual or deviates from the expected course.

keep these records, and it requires very little study for a school physician to be able to select by inspection of them those children who are not progressing in the manner considered by the author to represent normal growth and development.

The curves produced by the plotted measurements on these graphs probably reflect those changes in the various aspects of a child's health and development which the author claims are revealed by them, but more information than height and weight is required in most instances before the significance of any unusual positions or deviations in these curves can be ascertained. One should therefore be guarded in drawing conclusions from the grid alone. This caution is necessary in respect to any method of interpreting measurements, but the greater the claims for a technical procedure, the more necessary it is to warn against undue reliance upon its use without careful reference to clinical findings. The Wetzel Grid will undoubtedly be found to serve several useful purposes in connection with school health examinations, provided the physician uses it thoughtfully in conjunction with careful evaluation of other data.

Wetzel has pointed out that the use of the percentile graph method of plotting heights and weights separately on an age basis fails to distinguish between intrinsic characteristics of size or build and relative advancement in development. It is not certain that this differentiation is validly portrayed by means of the grid, notwithstanding the fact that the grid does yield two expressions of height-weight relationships that are not obtained when height and weight are plotted separately against age. It is principally for this reason, however, that the use of both Wetzel Grids and percentile graphs for height and weight by age may be more informative than the use of either one alone.

The writers do not believe that the use of the grid makes consideration of other measurements unnecessary for a satisfactory evaluation of physical status and physical progress or that the study of height and weight separately in relation to age has no additional value. The physician using the grid alone should at least observe the child carefully while interpreting it and should attempt to evaluate clinically the stockiness of the bony skeleton, the massiveness of the muscles, and the thickness of the subcutaneous tissue. Only in this way can he be certain what factors predominantly determine channel position. In using the Wetzel Grids, one not infrequently finds children who change grid channel without being able to obtain evidence either from history or on examination of nutritional or other health episodes which might be considered accountable. Such changes have been observed to occur in twins and in siblings at similar ages. These cases suggest that physique is not always constant during the school years, but that there may be individual or familial "preferential paths" which are sufficiently unusual to cause irregular progress in the grid channels.

Pryor<sup>16</sup> has prepared tables which give average weights for children in different categories of chest circumference and pelvic breadth as well as of height, age, and sex. This reference of a child to standards based upon children who are more like him in build (i.e., like him in chest circumference and hip width as well as height) tends to limit the range of expected variability in weight. It undoubtedly yields an expected weight which in many instances is a more appropriate one than that obtained from a height-weight table. The added time required for the use of these tables would seem to be justified, but the clinical evaluation of the various tissues is still required for proper interpretations as in using other methods.



The fact must not be overlooked that an obese child will have a larger chest circumference and a broader pelvic breadth than will an undernourished child, and hence the expected weight selected from these tables will be greater for the former than the latter. Thus with increasing obesity the weight considered appropriate for build will tend to rise, and with increasing malnutrition it will tend to fall.

McCloy<sup>17</sup> has published extensive studies relating to the appraisal of physical status. His procedure was that of investigating numerous measurements with reference to their relationships to each other and to other clinical data. On the basis of his studies he recommends a series of measurements for use in the school situation which includes the five selected by the writers and, in addition, the width of elbow or knee and the girths of upper arm, forearm, and thigh.\* McCloy states, however, that "if part of the program must be sacrificed . . . retain the upper arm girth, and eliminate girths of forearm, thigh, and calf." Thus for an abbreviated program, McCloy would select upper arm circumference instead of calf circumference, and would retain elbow or knee width, but otherwise his selection of measurements corresponds with ours except in respect to the evaluation of the amount of subcutaneous fat. For this purpose McCloy recommends the use of the subcutaneous spring caliper, advocated by Franzen, measuring fat on the front and back of the chest and on the abdominal wall, whereas we have relied upon a subjective evaluation of this attribute in two locations, recorded on the basis of a five point scale. McCloy obviously had much the same objectives in mind in selecting his measurements, and his list is probably

more appropriate than the one here given, if individuals properly trained in anthropometry and with sufficient time available can be present in the school. McCloy's interpretation of the measurements obtained calls for their "correction" for amount of fat by use of given tables and for obtaining several indices in the same manner. Thus McCloy's method involves somewhat more preparation and use of more tables than does the present one, but the additional effort may be justified for those having sufficient time and interest. For the details of his method of interpretation the reader is referred to the original publications.

Franzen,<sup>9</sup> Dearborn and Rothney,<sup>18</sup> and Massler,<sup>19</sup> as well as many others, have advocated still other measurements or different methods of evaluating them, but no purpose would be served by reviewing them here since they are not in common use and are not here being recommended.

In Part II of this article, the procedures to be followed in taking the recommended measurements, the method advocated for interpreting them, and the tables of norms and charts to be used in so doing will be presented.

#### REFERENCES

1. Meredith, H. V. The Rhythm of Physical Growth. *Univ. Iowa Stud. Ch. Wel.*, 11, 3:128, 1935.
2. Boynton, B. The Physical Growth of Girls. *Univ. Iowa Stud. Ch. Wel.*, 12, 4:105, 1936.
3. Stuart, H. C., and Dwinell, P. H. The Growth of Bone, Muscle and Overlying Tissues in Children Six to Ten Years of Age as Revealed by Studies of Roentgenograms of the Leg Area. *Child Dev.*, 13, 3:195, 1942. (See also, *Monographs, Soc. Res. Child Dev.*, 5, 3:190, 1940.)
4. Baldwin, B. T. Physical Growth and School Progress. U. S. Bureau of Educ., *Bull. No. 10* (Whole No. 581), 1914, pp. 215.
5. Meredith, H. V. The Prediction of Stature of North European Males Throughout the Elementary School Years. *Human Biol.*, 8, 2:279, 1937.
6. Meredith, H. V. Stature of Massachusetts Children of North European and Italian Ancestry. *Am. J. Phys. Anthropol.*, 24, 3:301, 1939.
7. Stuart, H. C. Medical Progress: Normal Growth and Development During Adolescence. *New England J. Med.*, 234, 20:666; 21:693; 22:732, 1946.
8. Stuart, H. C., and Sobel, E. H. The Thickness of the Skin and Subcutaneous Tissue by Age and Sex in Childhood. *J. Pediat.*, 28, 6:637, 1946.
9. Franzen, R. Physical Measures of Growth and Nutrition. *Monograph Am. Child Health Assoc.*, 2: 138, 1929.

\* A few other measurements are listed as optional for use in checking abnormal cases. Breathing capacity, strength index, and stage of pubescence are called for, but these are not here considered part of the anthropometric examination.

10. Baldwin, B. T., and Wood, T. D. Weight-Height-Age Tables. *Tables for Boys and Girls of School Age*. Am. Child Health Assoc., 1923, pp. 11. (See also, Baldwin, B. T. The Use and Abuse of Weight-Height-Age Tables as Indexes of Health and Nutrition. *J.A.M.A.*, 82, 1:1, 1924.)

11. Manuel, H. T. Physical Measurements of Mexican Children in American Schools. *Child Dev.*, 5, 3:237, 1934.

12. Steggerda, M., and Densen, P. Height, Weight, and Age Tables for Homogeneous Groups. *Child Dev.*, 7:115, 1936.

13. Faber, H. K. A Weight Range Table for Children from 5 to 15 Years of Age. *Am. J. Dis. Child.*, 38:757, 1929.

14. Jackson, R. L., and Kelly, H. G. Growth Charts for Use in Pediatric Practice. *J. Pediat.*, 27, 3:215, 1945.

15. Wetzel, N. C. Physical Fitness in Terms of Physique, Development, and Basal Metabolism. *J.A.M.A.*, 116, 12:1187, 1941. (See also, *J. Pediat.*, 22, 1:82, 1943; and *Medical Physics*, Ed. by Otto Glasser, 1944, p. 513.)

16. Pryor, H. B. *Width-Weight Tables*, 2nd Rev. Ed., 1940. Stanford Univ. Press, Stanford University, Calif.

17. McCloy, C. H. Appraising Physical Status: The Selection of Measurements. *Univ. Iowa Stud. Ch. Wel.*, 12, 2:126, 1936. Also, Methods and Norms. *Univ. Iowa Stud. Ch. Wel.*, 15, 2:260, 1938.

18. Dearborn, W. F., and Rothney, J. W. M. Basing Weight Standards upon Linear Bodily Dimensions. *Growth*, 2, 2:197, 1938.

19. Massler, M. Calculation of Normal Weight. *Child Dev.*, 16, 1 and 2:111, 1945.

## Part II. Methods To Be Followed in Taking and Interpreting Measurements and Norms To Be Used

### *Procedures to be Followed in Taking Measurements*

PART I of this article dealt with the problems involved in the use of body measurements in connection with the School Health Program and discussed the selection of measurements. The measurements recommended as a minimum for routine use in schools were weight, height, hip width (pelvic breadth at crests of ilia), chest circumference and leg girth (greatest circumference of calf). It was further recommended that subjective evaluations of the thickness of folds of skin and subcutaneous tissue be made by the clinician at two locations. It has been found that the five measurements can be taken and checked according to the plan recommended in the directions, and can be recorded and rated in relation to the recommended norms, in an average of eight minutes per child. With this done by the school nurse or another carefully trained assistant the physician can have in his hands at the beginning of the medical examination quantitative information, the possible significance of which he can grasp at a glance and which with a little practice

he will find of substantial help in interpreting his clinical findings.

It need hardly be said that the errors inherent in measuring children must be kept as small as possible if the results are to serve any useful purpose. Measurements must not only be taken in the same way at all examinations, but the same techniques must be followed as were used in establishing the norms to which they are referred. It follows, then, that the procedures described below represent those used in constructing the norms which we shall recommend as "frames of reference."

Since the measurements taken are to be referred to norms which give half year age values, as described below, it contributes to ease and accuracy of interpretation if appointments for children to be measured can be made near to their half year birthdays. For example, measurements taken when a child is 6 years, 2½ months of age must be compared with values for children who were approximately 6 years old when measured. A child 6 years, 3½ months of age must be compared with

standards for 6 years, 6 months. While these differences are relatively small, they may be eliminated by arranging for children to come in for measurements on a convenient date nearer to a half year age.

It is important that measurements be taken under working conditions which are as satisfactory as possible. Whenever the physical resources of the school will permit, a special room should be used. The room should be brought to a temperature of 75° F. to 80° F. and should be well lighted to assure that the small figures of the measuring instruments are clearly seen and correctly read. All measurements should be taken with the subject wearing nothing more than light socks and shorts or, in the case of older girls, light socks, shorts, and brassiere. Girls and boys should be measured at different times.

**Body Weight**—Use beam-type, platform scales. At the beginning of each examination period check the scales and, in the event they are out of balance, adjust them. Request the subject to stand in the center of the platform of the scales. As the record for weight is obtained, make sure that the subject's hands are not in contact with the head portion of the scales, with the wall, or with any other object.

**Standing Height**—Use a millimeter scale, two meters in length, fixed in the upright position and a wooden headpiece having two faces at right angles. The millimeter scale may be a wooden or metal anthropometer mounted against the wall, or a millimeter paper scale pasted either on a special board or (if the wall has a smooth surface and no projecting wainscoting) directly on the wall. The latter should be checked occasionally for accuracy. Orient the subject as follows: heels, buttocks, upper part of back, and rear of head in contact with the millimeter scale; heels nearly together but not touching each other; arms hanging at the sides in a

natural manner; head adjusted so that the tragus, or cartilagenous projection before the external orifice of the ear, and the lower border of the bony orbit lie in a plane parallel with the floor. When the subject is in position, place one face of the headpiece against the scale and bring the other face down, keeping it horizontal, until it crushes the subject's hair and makes firm contact with the top of his head. See that the heels are kept in firm contact with the floor, that the trunk is maintained in "non-slumped" contact with the scale, and that no obstruction prevents a firm contact with the head (e.g., combs, clasps, ribbons, or braids).

**Hip Width** (pelvic breadth at crests of ilia)—Use broad-branched, sliding calipers. Measure hip width as the distance from the lateral-most point of the crest of the ilium on one side to the corresponding point on the other side. With the subject in the erect position facing the measurer, place the inside face of each branch of the calipers squarely in contact with one of the landmarks. Apply the maximum pressure that can be exerted without pain to the subject. If the subject appears to turn his hips as the pressure is applied, check the measurement.

**Chest Circumference**—Use a millimeter steel or linen tape. In the latter case check this tape frequently against a meter stick and discard if it has stretched or shrunk appreciably. Have the subject stand in a natural manner and look straight ahead; move the subject's arms slightly away from the sides of the body and request that they be so held in order to permit passing the tape around the thorax. Stand (or sit) in front of the subject and measure the girth of the thorax at the level of the xiphoid process or lowest segment of the sternum (e.g., the notch just under the body of the sternum and between the attachments of the last ribs), and in a plane at right angles to the

vertebral column. Usually the tape will be almost in the horizontal plane and posteriorly it will lie below the inferior angles of the scapulae. Apply only sufficient tension to enable the tape to rest against the perimeter of the thorax without slipping. Record the median value obtained during normal respiration. Conversing with the child overcomes attempts at "holding the breath." It is particularly necessary to note that the position of the head is maintained, since the child's interest in the procedure often prompts him to look down at the tape.

*Leg Girth* (Maximum circumference of calf)—Use the same instrument as for chest circumference. Have the subject stand with his feet several inches apart and with his weight equally distributed through both lower limbs. Pass the tape around the left leg and measure the maximum girth of the calf at right angles to its long axis. It is necessary to try several different levels in the calf region in order to locate the largest measurement. Care must be taken to see that the tape is kept at right angles to the long axis of the leg and that its contact is at once definite but "slight" (i.e., not sufficient to indent the skin).

Whenever time will allow, take two separate measurements of height, hip width, and the circumferences of chest and leg. This procedure will be found highly profitable for it occasionally eliminates large errors, adds to the precision of the records, and keeps the measurer directly informed regarding the reliability of his (or her) measurements.

*Thickness of Skin and Subcutaneous Tissue (fat)*—Estimate this in two areas: (a) in the region slightly below and a little lateral to the inferior angle of the left scapula, and (b) in the region immediately above the crest of the left ilium. For each area, use the method of first placing the thumb and index finger

of one hand in an opposable relationship at a distance of about 30 millimeters (experience with the method will reveal the desirability of adapting this distance to the firmness and amount of subcutaneous tissue of the individual subject), and of then drawing the two digits together and elevating between them a double layer of skin and subcutaneous tissue. The object in this is to secure between one's thumb and index finger a *complete double layer* of skin and subcutaneous tissue without including any of the underlying muscle tissue. After a satisfactory fold has been obtained, it should be held with moderate firmness and its thickness rated on a five-category scale. The rating presupposes a background of information and experience. It presupposes the knowledge that in these two areas the thickness of the skin and subcutaneous tissue tends to increase with age during the school years and to be greater at any given age in females than in males.\* It further assumes considerable clinical experience in making judgments of subcutaneous tissue in these areas—experience affording a working familiarity with the range of individual differences found in given age-sex groups.

Employ the symbols +, ++, +++, +++++ and ++++++. Let + represent the lower end of the scale, +++ an average amount of tissue, and ++++++ the upper end of the scale. Thus for the supra-iliac region in females: at 6 years of age, ratings of +, ++, and +++ will correspond to tissue folds with thicknesses of approximately "6 to 7 mm.," "10 to 12 mm.," and "17 mm. or

\* To illustrate: In the typical white female, the thickness of the skin and subcutaneous tissue increases over the period 6 to 18 years from 8 to 15 mm. on the back of the thorax and from 11 to 20 mm. above the ilium. The values for the typical white male are only slightly lower at 6 years but show smaller increase over the elementary and high school years; for each area the increase in thickness is roughly 85 per cent on females and 50 per cent on males.

more," respectively; at 18 years of age the same symbols will indicate folds approximating "9 to 12 mm.," "17 to 23 mm.," and "30 mm. or more," respectively. Similarly for the designated region on the back of the thorax in males: at 6 years of age ratings of +, +++, and +++++ will correspond to tissue folds having thicknesses of about "4 to 5 mm.," "7 to 8 mm.," and "12 mm. or more," respectively; at 18 years of age the same symbols will indicate folds of roughly "6 to 7 mm.," "10 to 13 mm.," and "20 mm. or more," respectively. Ratings will be facilitated by scheduling the children of each sex in order of age or grade.

#### THE INTERPRETATION OF MEASUREMENT RESULTS

A recorded measurement only has value for the school physician to the extent that he is able to interpret it meaningfully. Some meaning may be derived by relating it to a standard figure representing the average, but much more is obtained when it is related to figures depicting the distribution for the measurement. This tells not only whether the measurement is above or below the average, but also how unusual it is, e.g., whether the child is larger or smaller in this respect than 60 per cent of his group, 75 per cent of his group, or 90 per cent of his group. Additional value attaches to a measurement if its position in the distribution is compared with the rankings of the individual in other attributes. For example, when considering the significance of a low position in the weight distribution it is important to know what positions the child holds in the distributions for height, chest circumference, and hip width. These considerations have to do with helping to understand what the child is like *at the moment*. Still more value can be secured from a child's measurements at the moment if they can be compared with those taken

at earlier ages, thus obtaining evidence as to the relative rates of progress. A rise in the position held by a measurement within the range at one age over a previous age indicates that growth has been more rapid than usual in this dimension during the intervening time, and a fall in its position indicates that it has been less rapid. Thus, following the positions held by each measurement from period to period is an effective means of recognizing whether or not a child has been growing in a satisfactory manner. This is a more appropriate method of comparing a child's growth with his own expectancy than is comparing the actual gain with tables of average gains.

Perhaps a specific illustration will reinforce and epitomize the values of measurements that have been enumerated. A boy age 6 years is found to weigh 43 lbs. This means little unless one knows that about 80 per cent of boys age 6 years weigh more than 43 lbs. It means more if one knows that this boy is not short and not of slender build, being up to the average for boys of 6 years in height, chest circumference, and hip width. It means still more if one knows that he weighed 41 lbs. at 5 years, which was nearly up to average, about 60 per cent weighing more than 41 lbs. at that age. Clearly this failure to gain normally is revealed and its extent recognized by bringing into juxtaposition the rankings of this boy at the two ages. School health personnel will not fail to appreciate the breadth of helpful information which accrues from such interpretations of status and progress.

Many schemes have been devised to aid in the problem of measurement interpretation and of rendering the conclusions arrived at as valid as possible. Some of these have been referred to in Part I of this paper. Unwarranted interpretations due to the faulty choice or use of norms can easily render a

program of measurement of no avail, and at times may lead to the recommendation of procedures which are positively harmful. As has been indicated, we consider it desirable that attention be focused upon the position of each measurement in the distribution of measurements, rather than upon the relation of each measurement to the average alone. This tends to counteract the erroneous inference that the average is the standard all should attain, or that a certain percentage deviation from the average separates the normal and satisfactory from the abnormal or unsatisfactory. For practical purposes it is helpful if one can determine the ranking of a measurement by direct reference to tables or charts, without resort to mathematical calculations. Being able to convert measurements rapidly into positional ranks serves to direct attention from their numerical values to their implications for health appraisal. It is also our view that the method most practical should not only minimize mathematical procedures, but should provide for separate consideration as well as ready intercomparison of the rankings in different measurements. That is, it should be possible (a) to take cognizance of the change in each individual measurement—in weight or height, for instance, not merely weight in terms of height, and (b) to study—in comparable terms—the changes in one measurement with those in another or in several others.

The two methods in common use for characterizing distributions of measurements are the standard deviation and percentiles. Although a series of selected percentiles (e.g., the 10th, 25th, 50th, 75th and 90th) does not allow as accurate placement of individuals as does the standard deviation, the greater refinement possible through the latter is not necessary for school health purposes. For example, it would be more precise to say that a child's

height was 0.9 standard deviations below the mean than to say that it fell between the 10th and 25th percentiles or just below the 20th percentile. However, either of the latter expressions is sufficient for practical purposes and is more readily understood by most physicians than are statements in terms of the standard deviation.

By use of percentile tables or charts the physician can readily determine in what portion of the distribution a child falls with respect to each measurement taken. He may then compare the positions held for the different measurements at the time and note whether the same positions are maintained from one examination to another. This method allows considerable latitude as to what measurements are taken and requires that the physician think for himself regarding the implications of the relationships found between measurements.

A form sheet for each child is presented in Figure 1 to suggest how measurements "M" and percentile ranks "P" may conveniently be recorded whenever taken and carried in the school health files. Following down the percentile rank column for any given measurement the physician can note at a glance if a marked change has occurred. Following across the line for a particular age he can rapidly envisage the relationships between measurements. While it is not necessary in every instance to plot these values on graphs in order to interpret them adequately, it is recommended that with children measured periodically their successive records be displayed in graphic form. Hence Figures 2 and 3 constitute charts on which may be plotted the records for an individual boy or girl at all school ages. These may be printed on a separate sheet or (somewhat more economically, but less conveniently) on the back of the sheet reproducing Figure 1.

The question arises. Low representa-

TABLE 1

*Selected Percentiles for Five Body Measurements: Ages 5 to 9 Years**(The basic data were collected 1930-1945 on Iowa City children of northwest European ancestry attending University of Iowa experimental schools.)*

Boys					Girls				
Percentiles					Percentiles				
10	25	50	75	90	10	25	50	75	90
<b>5 Years</b>					<b>5 Years</b>				
36.6	39.6	42.8	46.5	49.7	Weight	36.1	38.6	41.4	44.2
105.3	108.3	111.3	114.2	116.7	Height	105.0	107.2	109.7	112.9
17.0	17.6	18.3	18.9	19.6	Hip Width	17.0	17.4	18.0	18.7
51.6	52.8	54.5	56.2	57.5	Chest Circ.	50.2	51.4	52.9	54.6
21.0	21.7	22.6	23.6	24.6	Leg Girth	21.1	21.8	22.8	23.8
<b>5½ Years</b>					<b>5½ Years</b>				
38.8	42.0	45.6	49.3	53.1	Weight	38.0	40.8	44.0	47.2
108.3	111.2	114.4	117.5	120.1	Height	107.8	110.2	112.8	116.1
17.4	18.0	18.7	19.4	20.1	Hip Width	17.4	17.8	18.4	19.1
52.4	53.6	55.3	57.1	58.5	Chest Circ.	50.9	52.2	53.7	55.5
21.4	22.2	23.1	24.1	25.2	Leg Girth	21.5	22.3	23.3	24.3
<b>6 Years</b>					<b>6 Years</b>				
40.9	44.4	48.3	52.1	56.4	Weight	39.9	42.9	46.5	50.2
111.2	114.1	117.5	120.8	123.5	Height	110.6	113.2	115.9	119.3
17.7	18.4	19.1	19.8	20.5	Hip Width	17.7	18.2	18.8	19.5
53.2	54.4	56.1	57.9	59.5	Chest Circ.	51.5	52.9	54.5	56.3
21.8	22.6	23.6	24.6	25.7	Leg Girth	21.9	22.7	23.8	24.8
<b>6½ Years</b>					<b>6½ Years</b>				
43.4	47.1	51.2	55.4	60.4	Weight	42.2	45.5	49.4	53.3
114.1	117.2	120.8	124.2	127.0	Height	113.7	116.2	119.1	122.6
18.1	18.8	19.5	20.2	21.0	Hip Width	18.1	18.6	19.2	20.0
54.1	55.3	57.0	58.9	60.6	Chest Circ.	52.2	53.7	55.3	57.2
22.2	23.1	24.1	25.2	26.3	Leg Girth	22.3	23.2	24.3	25.4
<b>7 Years</b>					<b>7 Years</b>				
45.8	49.7	54.1	58.7	64.4	Weight	44.5	48.1	52.2	56.3
116.9	120.3	124.1	127.6	130.5	Height	116.8	119.2	122.3	125.9
18.5	19.2	19.9	20.6	21.4	Hip Width	18.4	18.9	19.6	20.4
54.9	56.1	57.8	59.8	61.6	Chest Circ.	52.8	54.4	56.1	58.0
22.6	23.5	24.6	25.7	26.9	Leg Girth	22.7	23.7	24.8	25.9
<b>7½ Years</b>					<b>7½ Years</b>				
48.5	52.6	57.1	62.1	68.7	Weight	46.6	50.6	55.2	59.8
120.0	123.5	127.1	130.9	133.9	Height	119.5	122.0	125.2	128.8
18.9	19.6	20.3	21.0	21.9	Hip Width	18.8	19.3	20.1	20.9
55.8	57.1	58.8	61.0	62.9	Chest Circ.	53.5	55.1	57.0	59.0
23.1	24.1	25.2	26.3	27.6	Leg Girth	23.1	24.2	25.3	26.4
<b>8 Years</b>					<b>8 Years</b>				
51.2	55.5	60.1	65.5	73.0	Weight	48.6	53.1	58.1	63.3
123.1	126.6	130.0	134.2	137.3	Height	122.1	124.8	128.0	131.6
19.2	19.9	20.7	21.4	22.3	Hip Width	19.1	19.7	20.5	21.3
56.7	58.0	59.8	62.1	64.1	Chest Circ.	54.2	55.8	57.8	59.9
23.6	24.6	25.7	26.8	28.2	Leg Girth	23.5	24.6	25.8	26.9
<b>8½ Years</b>					<b>8½ Years</b>				
53.8	58.3	63.1	68.9	77.0	Weight	50.6	55.5	61.0	66.9
125.7	129.1	132.8	137.0	140.0	Height	124.6	127.3	130.5	134.4
19.6	20.3	21.1	21.8	22.7	Hip Width	19.4	20.1	20.9	21.8
57.6	59.0	60.8	63.3	65.4	Chest Circ.	54.9	56.5	58.7	60.9
24.1	25.1	26.3	27.4	28.9	Leg Girth	23.9	25.0	26.3	27.5
<b>9 Years</b>					<b>9 Years</b>				
56.3	61.1	66.0	72.3	81.0	Weight	52.6	57.9	63.8	70.5
128.3	131.6	135.5	139.8	142.6	Height	127.0	129.7	132.9	137.1
19.9	20.6	21.4	22.2	23.0	Hip Width	19.7	20.5	21.3	22.2
58.4	59.9	61.8	64.4	66.7	Chest Circ.	55.5	57.2	59.6	61.9
24.5	25.6	26.8	28.0	29.5	Leg Girth	24.2	25.4	26.8	28.1

TABLE 1 (Cont.)

Selected Percentiles for Five Body Measurements: Ages 9½ to 13½ Years

Boys					Girls				
Percentiles					Percentiles				
10	25	50	75	90	10	25	50	75	90
<i>9½ Years</i>									
58.7	63.7	69.0	76.0	85.5	Weight	54.9	60.4	67.1	74.8
130.6	134.0	137.9	142.1	145.1	Height	129.4	132.2	135.8	139.9
20.2	21.0	21.7	22.6	23.5	Hip Width	20.1	20.9	21.8	22.8
59.3	60.9	62.9	65.5	68.1	Chest Circ.	56.2	58.0	60.5	63.2
24.9	26.0	27.3	28.5	30.1	Leg Girth	24.7	25.9	27.3	28.6
<i>10 Years</i>									
61.1	66.3	71.9	79.6	89.9	Weight	57.1	62.8	70.3	79.1
132.8	136.3	140.3	144.4	147.5	Height	131.7	134.6	138.6	142.6
20.4	21.3	22.0	22.9	23.9	Hip Width	20.5	21.2	22.2	23.3
60.1	61.8	63.9	66.6	69.4	Chest Circ.	56.9	58.7	61.4	64.4
25.3	26.4	27.7	29.0	30.7	Leg Girth	25.1	26.3	27.7	29.1
<i>10½ Years</i>									
63.7	69.0	74.8	83.4	94.6	Weight	59.9	66.4	74.6	84.1
135.1	138.4	142.3	146.8	149.7	Height	134.4	137.5	141.7	145.9
20.8	21.6	22.3	23.2	24.4	Hip Width	21.0	21.7	22.9	24.0
60.9	62.8	64.9	67.7	70.7	Chest Circ.	57.8	59.9	62.8	65.8
25.7	26.8	28.1	29.5	31.4	Leg Girth	25.6	26.8	28.3	29.9
<i>11 Years</i>									
66.3	71.6	77.6	87.2	99.3	Weight	62.6	69.9	78.8	89.1
137.3	140.5	144.2	149.2	151.8	Height	137.0	140.3	144.7	149.2
21.1	21.8	22.6	23.5	24.8	Hip Width	21.4	22.2	23.5	24.6
61.7	63.7	65.9	68.8	71.9	Chest Circ.	58.6	61.1	64.2	67.2
26.0	27.1	28.5	30.0	32.0	Leg Girth	26.0	27.3	28.9	30.6
<i>11½ Years</i>									
69.2	74.6	81.0	91.6	104.5	Weight	66.1	74.0	83.2	94.0
139.8	142.9	146.9	151.4	154.8	Height	139.8	143.1	148.1	152.9
21.5	22.2	23.1	24.0	25.3	Hip Width	21.9	22.8	24.2	25.4
62.5	64.6	66.9	69.9	73.1	Chest Circ.	59.6	62.5	65.5	68.5
26.4	27.6	29.0	30.6	32.8	Leg Girth	26.6	27.9	29.5	31.2
<i>12 Years</i>									
72.0	77.5	84.4	96.0	109.6	Weight	69.5	78.0	87.6	98.8
142.4	145.2	149.6	153.5	157.9	Height	142.6	145.9	151.5	156.6
21.9	22.6	23.5	24.5	25.8	Hip Width	22.4	23.4	24.9	26.2
63.3	65.5	67.8	70.9	74.2	Chest Circ.	60.6	63.8	66.7	69.7
26.8	28.0	29.5	31.2	33.5	Leg Girth	27.1	28.5	30.1	31.8
<i>12½ Years</i>									
74.6	80.6	88.7	102.0	116.4	Weight	74.7	83.7	93.4	104.9
144.5	147.5	152.3	157.2	161.6	Height	145.9	149.3	154.3	159.1
22.3	23.1	24.1	25.1	26.5	Hip Width	23.0	24.0	25.5	26.8
64.2	66.5	69.1	72.4	75.8	Chest Circ.	61.8	64.9	67.7	70.9
27.3	28.6	30.1	32.0	34.2	Leg Girth	27.7	29.1	30.7	32.4
<i>13 Years</i>									
77.1	83.7	93.0	107.9	123.2	Weight	79.9	89.4	99.1	111.0
146.6	149.7	155.0	160.8	165.3	Height	149.1	152.6	157.1	161.5
22.7	23.6	24.6	25.6	27.2	Hip Width	23.6	24.6	26.0	27.4
65.0	67.4	70.3	73.8	77.4	Chest Circ.	62.9	65.9	68.6	72.0
27.8	29.2	30.8	32.7	34.8	Leg Girth	28.2	29.7	31.2	32.9
<i>13½ Years</i>									
82.2	89.6	100.3	115.5	130.1	Weight	85.5	94.6	103.7	115.4
149.4	153.1	158.9	164.6	168.9	Height	151.1	154.4	158.4	162.6
23.2	24.1	25.2	26.4	27.8	Hip Width	24.2	25.2	26.5	27.8
66.3	68.8	72.4	75.8	79.4	Chest Circ.	63.8	66.6	69.3	72.9
28.5	29.9	31.6	33.4	35.3	Leg Girth	28.7	30.2	31.6	33.4

(Cont.)



TABLE 1 (Cont.)

*Selected Percentiles for Five Body Measurements: Ages 14 to 18 Years*

Boys					Girls				
Percentiles					Percentiles				
10	25	50	75	90	10	25	50	75	90
<i>14 Years</i>					<i>14 Years</i>				
87.2	95.5	107.6	123.1	136.9	Weight	91.0	99.8	108.4	119.7
152.1	156.5	162.7	168.4	172.4	Height	153.0	156.1	159.6	163.7
23.6	24.6	25.8	27.1	28.3	Hip Width	24.8	25.8	26.9	28.1
67.6	70.2	74.5	77.8	81.4	Chest Circ.	64.6	67.2	69.9	73.7
29.1	30.6	32.3	34.1	35.8	Leg Girth	29.2	30.6	32.0	33.8
<i>14½ Years</i>					<i>14½ Years</i>				
93.3	101.9	113.9	129.1	142.4	Weight	94.2	102.5	111.0	121.8
155.0	159.4	165.3	170.7	174.6	Height	154.1	156.9	160.4	164.3
24.1	25.1	26.3	27.5	28.7	Hip Width	25.2	26.2	27.2	28.4
69.4	72.3	76.3	79.6	83.1	Chest Circ.	65.1	67.7	70.4	74.2
29.8	31.3	32.9	34.6	36.2	Leg Girth	29.6	30.9	32.3	34.1
<i>15 Years</i>					<i>15 Years</i>				
99.4	108.2	120.1	135.0	147.8	Weight	97.4	105.1	113.5	123.9
157.8	162.3	167.8	173.0	176.7	Height	155.2	157.7	161.1	164.9
24.6	25.6	26.7	27.9	29.1	Hip Width	25.6	26.5	27.5	28.7
71.1	74.4	78.0	81.3	84.8	Chest Circ.	65.5	68.1	70.9	74.7
30.4	31.9	33.4	35.1	36.6	Leg Girth	29.9	31.1	32.6	34.3
<i>15½ Years</i>					<i>15½ Years</i>				
105.2	113.5	124.9	139.7	152.6	Weight	99.2	106.8	115.3	125.6
160.3	164.7	169.7	174.8	178.2	Height	155.7	158.2	161.7	165.3
25.1	26.0	27.1	28.2	29.4	Hip Width	25.9	26.7	27.8	29.0
72.8	75.8	79.4	82.9	86.3	Chest Circ.	65.8	68.4	71.3	75.1
30.9	32.3	33.8	35.5	37.0	Leg Girth	30.1	31.4	32.9	34.5
<i>16 Years</i>					<i>16 Years</i>				
111.0	118.7	129.7	144.4	157.3	Weight	100.9	108.4	117.0	127.2
162.8	167.1	171.6	176.6	179.7	Height	156.1	158.6	162.2	165.7
25.6	26.4	27.4	28.4	29.6	Hip Width	26.1	26.9	28.0	29.2
74.4	77.2	80.7	84.5	87.8	Chest Circ.	66.1	68.7	71.6	75.4
31.3	32.7	34.2	35.8	37.3	Leg Girth	30.3	31.6	33.1	34.6
<i>16½ Years</i>					<i>16½ Years</i>				
114.3	121.6	133.0	147.9	161.0	Weight	101.9	109.4	118.1	128.4
164.2	168.4	172.7	177.4	180.7	Height	156.2	158.8	162.4	165.9
25.9	26.7	27.6	28.6	29.8	Hip Width	26.2	27.0	28.2	29.3
75.4	78.1	81.6	85.4	88.8	Chest Circ.	66.3	69.0	71.9	75.7
31.5	32.9	34.4	36.1	37.6	Leg Girth	30.5	31.8	33.3	34.8
<i>17 Years</i>					<i>17 Years</i>				
117.5	124.5	136.2	151.4	164.6	Weight	102.8	110.4	119.1	129.6
165.5	169.7	173.7	178.1	181.6	Height	156.3	159.0	162.5	166.1
26.1	26.9	27.8	28.7	29.9	Hip Width	26.3	27.1	28.3	29.4
76.4	78.9	82.5	86.2	89.7	Chest Circ.	66.4	69.2	72.1	75.9
31.7	33.1	34.6	36.3	37.8	Leg Girth	30.6	31.9	33.4	34.9
<i>17½ Years</i>					<i>17½ Years</i>				
118.8	125.8	137.6	153.6	166.8	Weight	103.2	110.8	119.5	130.2
165.9	170.1	174.1	178.5	182.0	Height	156.3	159.0	162.5	166.1
26.3	27.0	27.9	28.8	30.0	Hip Width	26.4	27.2	28.4	29.5
77.0	79.4	83.0	86.7	90.2	Chest Circ.	66.5	69.3	72.2	76.0
31.8	33.3	34.8	36.5	38.0	Leg Girth	30.7	32.0	33.5	35.0
<i>18 Years</i>					<i>18 Years</i>				
120.0	127.1	139.0	155.7	169.0	Weight	103.5	111.2	119.9	130.8
166.3	170.5	174.5	178.9	182.4	Height	156.3	159.0	162.5	166.1
26.5	27.1	28.0	28.9	30.1	Hip Width	26.4	27.2	28.4	29.5
77.5	79.8	83.4	87.1	90.7	Chest Circ.	66.6	69.4	72.3	76.1
31.9	33.4	34.9	36.6	38.1	Leg Girth	30.8	32.1	33.6	35.1



## BOYS

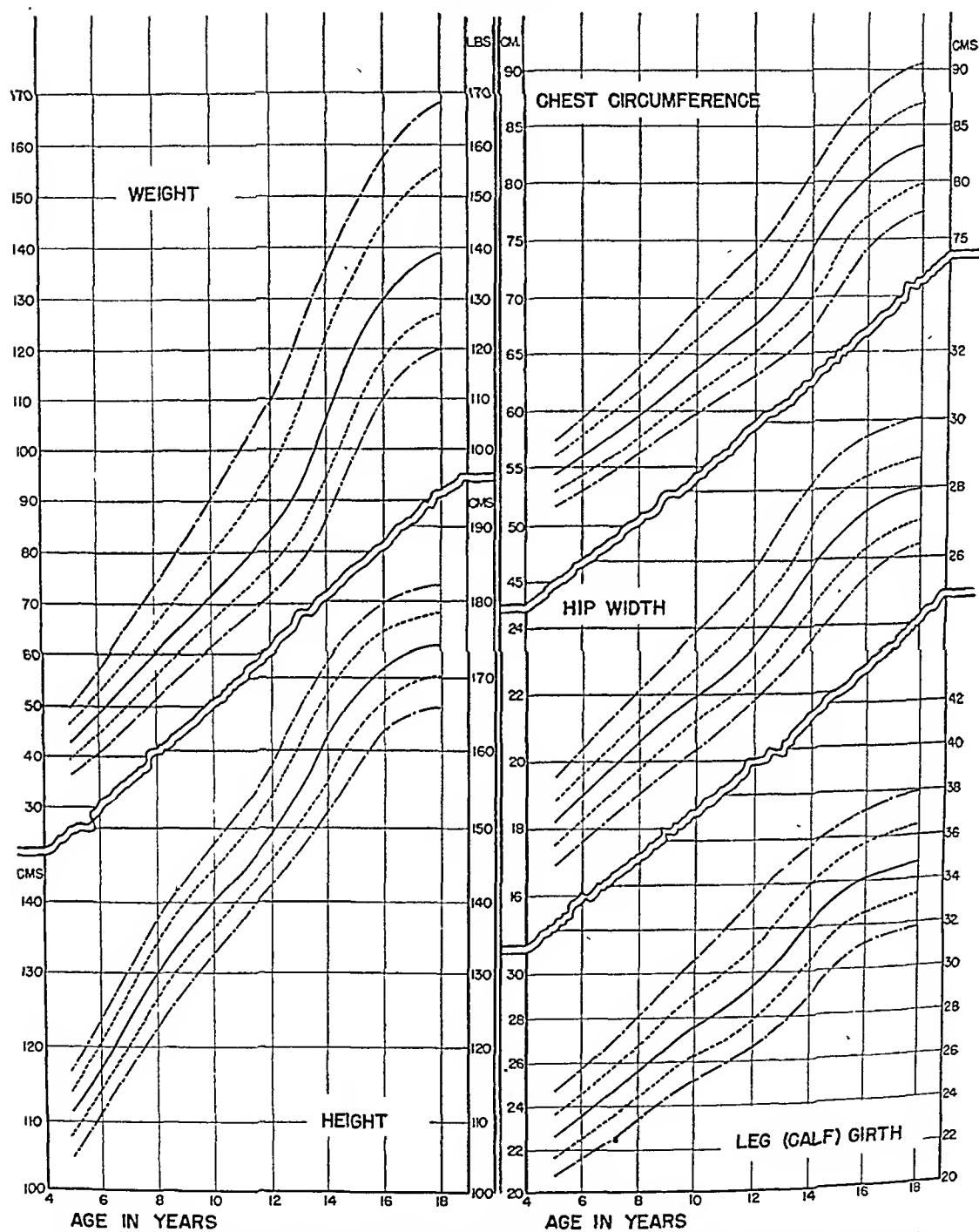


FIGURE 2—Graphs for plotting measurements of boys. For each measurement the trend lines shown—proceeding from the highest to the lowest—represent the 90th, 75th, 50th, 25th and 10th percentiles.

## GIRLS

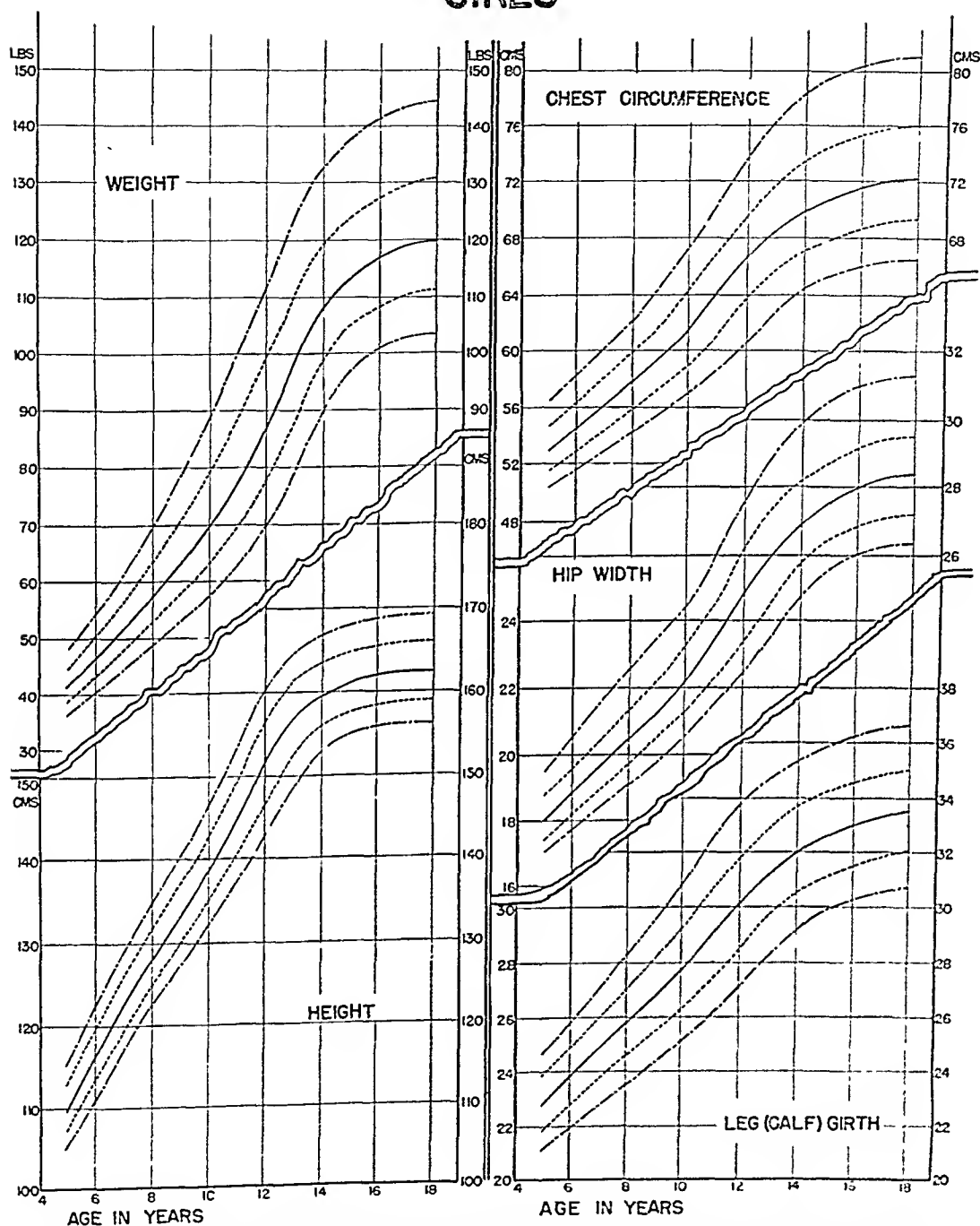


FIGURE 3—Graphs for plotting measurements of girls. For each measurement the trend lines shown—proceeding from the highest to the lowest—represent the 90th, 75th, 50th, 25th and 10th percentiles.

constructed representing other racial groups (e.g., Negroid, Mongoloid, American Indian, Mexican).

#### NORMS TO BE USED IN MAKING INTERPRETATIONS

The norms recommended for present use were derived from measurements of white children living in or near Iowa City, Iowa. The children were all in attendance at the University of Iowa experimental elementary and high schools during one or more of the years 1930 through 1945.\* Their parents were almost exclusively American-born and their grandparents predominantly American-born. Over 90 per cent of the children were of northwest European ancestry, while only a scattering were of southeast European descent. Approximately 40 per cent of the fathers were professional men (mainly members of university faculty); 35 per cent business proprietors, managers, or skilled trade employees; 15 per cent farmers; and the remaining 10 per cent clerks, carriers, or semi-skilled laborers. The only rejections were rare instances of gross physical pathology (e.g., body deformity, marked endocrine dysfunction). Summarizing for racial stock, socio-economic selection and physical condition, the subjects may be described as:

Almost entirely of northwest European descent  
Predominantly from the professional and managerial classes  
Physically normal (non-pathologic) children

The basic materials employed consisted of 3,771 measurements each for weight, height, chest circumference, hip width, and leg girth. They were obtained from anthropometric examina-

tion of several hundred children; most of the children had records extending over 3 to 6 years, a few were available for examination only once, and for a few there were seriatim data covering upward of 9 years.

When the records for each measurement were grouped according to sex and year of age of the child, the following subtotals were obtained:

Age in Years	Boys	Girls
5	235	210
6	218	169
7	169	130
8	142	115
9	120	110
10	117	112
11	101	113
12	95	112
13	100	120
14	118	134
15	144	169
16	137	151
17	117	140
18	86	87

Two comments are pertinent regarding this tabulation. First, the numbers for each age represent the numbers of different children measured at that age (i.e., at age 5 years measurements were available on 235 boys and 210 girls). Secondly, the children were usually measured within 2 weeks of the age indicated. It follows from this that the norms for 5 years represent children exactly this age, and, consequently, a child who gives his age as 5, yet actually is 5 years, 4 months, or 5 years, 5 months, should be referred not to the 5 year norms but to the 5½ year norms.\*

After division into age-sex subgroups, the records for each measurement were tabulated in a frequency distribution (arranged in approximate rank order) and five selected percentiles (10th, 25th,

\* The inappropriateness of evaluating present-day children with norms based upon data collected earlier than the 1930's has been clearly shown. See reports by Meredith in *Am. J. Dis. Child.* 62:909, 1941; *Human Biol.*, 16:126, 1944; and *Am. J. Phys. Anthropol.*, 28:1, 1941.

\* The full year values given in the tables represent actual measurements, usually within 2 weeks of the birthday. The half year values represent measurements derived by interpolation. Sufficient accuracy is attained by relating a child to the nearest half year norms in the table without further interpolation.

50th, 75th, and 90th) obtained. Table 1 presents the percentiles for each measurement arranged according to age and sex. It will be seen, for instance, that the typical values (50th percentiles) secured on the 235 5 year old boys are approximately 43 lbs. for weight, 111 cm. for height, 18 cm. for hip width, 54 cm. for chest circumference, and 23 cm. for leg girth.

#### ILLUSTRATIVE EXAMPLES OF THE USE OF THE NORMS AND THE INTERPRETATION OF MEASUREMENTS

In order to illustrate the use of Table 1 in conjunction with Figure 1, assume that a school nurse has just measured two 5 year old girls (i.e., preferably at or near their 5th birthdays but not less than 4 years, 9 months, and not yet 5 years, 3 months). She records her results on reproductions of Figure 1 in columns "M" under each measurement, in a line giving the child's exact age to the nearest month. She then finds the appropriate percentile figures to record for each in column "P" by reference to the 5 year old norms for girls in Table 1 as follows: If the measurement is near to one of the percentile values, the number of that percentile should be recorded adding the plus or minus sign if required. If the measurement falls more nearly between two percentile values, both should be indicated. Thus, the percentile positions of different measurements may be recorded under "P" as: 10—, 10, 10+, 10-25, 25—, etc. Assume that the records on girl A are 36 lbs. (weight), 105 cm. (height), 17 cm. (hip width), 50 cm. (chest circumference), and 21 cm. (leg girth), while the corresponding measurements on girl B are 45 lbs., 109 cm., 18 cm., 54 cm., and 23 cm. On referring to Table 1, it is found that each of A's measurements has a percentile rank at or very near P 10, and, consequently, 10 is entered on A's sheet in the "P" column

to the right of each measurement. B's measurements are a little less readily transformed into percentile ranks. Her weight is 45 lbs., a figure higher than the 75th percentile in Table 1 but much nearer to the 75th than the 90th percentile. It should therefore be recorded as P 75+. In height B falls a little below the 50th percentile from Table 1 and, in accordance with the foregoing recommendations, is assigned a rank of P 50—. In chest circumference B falls more nearly half way between the 50th and 75th percentiles and is therefore recorded as P 50-75. For hip width the correct value is P 50 and for leg circumference P 50+.

Turning to the interpretation of measurements, brief comment on eight illustrative profiles will be ample to suggest to the physician the scope of information that measurements can supply.

Child R, a girl age 7 years, has percentile ranks of 90 plus or minus in all measurements and ratings of +++ for thickness of skin and subcutaneous tissue; she is a large, proportionately well balanced girl—a girl not exceeded in any measurement by more than 10 per cent of the normative group of girls this age.

Child S, a boy aged 7 years, has percentile ranks at or near 10 in all measurements and ratings of +++ for thickness of skin and subcutaneous tissue; he is a small, proportionately well balanced boy—a boy exceeded in each measurement by 90 per cent of the normative group of boys his age.

Child T, a boy 9 years of age, has percentile ranks of 75+ in height, 25 in hip width, and 25-50 in chest circumference, together with ratings for thickness of skin and subcutaneous tissue of +++ on the back of the thorax and ++ above the ilium; he is a moderately tall boy of distinctly slender build.

Child V, a girl 9 years of age, has percentile ranks of 50 for height, 75+ for hip width, and 90 for chest circumference, together with tissue ratings of +++ in both areas; she is a girl of average height and decidedly stocky build.

Child W, an 11 year old girl, has percentile ranks of 75 in height and hip width, 75— in chest circumference, 50-75 in leg girth, and

50— in weight, combined with ratings of + for thickness of skin and subcutaneous tissue; she is a child that should be carefully checked for presence of disease conditions, additional dietary requirements, and needed changes in daily regimen.

Child X, another 11 year old girl, has percentile ranks of 95 for weight and leg girth, 75+ for chest circumference, 75 for hip width, and 50-75 for height, in combination with tissue ratings of +++++; she is a child that should be thoroughly appraised from the standpoints of possible endocrine therapy and nutritional control.

Children Y and Z are 15 year old boys. When 10 years of age both had percentile ranks approximating 50 in all measurements. Comparison of their records over the succeeding 5 years shows a gradual divergence in ranks. Now (at 15 years) Y's percentile ranks approximate 75 throughout and Z's ranks are all between 10 and 25. These patterns of change indicate that the so-called adolescent acceleration occurred at a fairly early age in the case of Y while, in the case of Z, it has not yet manifested itself.

#### CONCLUSIONS

It is desirable that school health services take a few body measurements on all children once or twice yearly and that they adopt a simple uniform method of interpreting them. This should take into account the position held by each child in each measurement at each examination in relation to the customary ranges of variability for like sex and age. In the school situation it does not seem necessary that mathematical equations or indices be worked out or that many measurements be considered. It is important that all measurements be taken carefully according to the procedures used in estab-

lishing the norms. The physician should have these data in hand at the time of examinations and evaluate them in the light of clinical observations.

It is proposed that weight, height, hip width, chest circumference, and leg girth be adopted as basic measurements and taken according to standard techniques as described. It is also suggested that these be recorded as such together with the percentile positions which they represent and that they be plotted on graphs which reveal these percentiles. The necessary tables and graphs are given. The physician should consider the percentile position of each measurement individually and in relation to all the other measurements at each examination, and any changes which may take place from one examination to another. Marked changes should lead to special examinations if they would not otherwise be made routinely. The school physician should acquire the habit of thinking of the significance of these findings in relation to what he can learn about the child from such history as he is able to obtain and such observations as he can make at the time of examination. Among the latter, it is especially important that he give a rating to the amount of skin and subcutaneous tissue and that he take note of muscular development. Measurements serve merely as aids to thoroughgoing evaluation of physical status and growth progress; without careful clinical interpretation they rarely justify clinical diagnoses.

# Participation by State and Local Health Departments in Current Medical Care Programs\*

JOSEPH W. MOUNTIN, M.D., F.A.P.H.A.

*Medical Director, U. S. Public Health Service, Washington, D. C.*

MANY persons in public health work are convinced of the artificiality of administrative barriers that persist between preventive medicine and medical care in the United States. As medical science has advanced we have learned that the cure of a communicable disease in one individual may prevent its occurrence in others, and that early treatment of any illness tends to lessen the need for more extensive care later. Today scarcely any aspect of clinical medicine is without its preventive component. On this obvious truth there is little if any intellectual disagreement, but unfortunately it finds far too little expression in action programs.

Attitudes as they exist in the United States serve to perpetuate the figment of separation between prevention and treatment. Health departments continue their original orientation toward a limited notion of prevention; private physicians, dentists, and hospitals regard as their exclusive domain the diagnosis and treatment of profitable illness; and welfare agencies accept, on a relief basis, those who cannot meet the costs of their own care. This arrangement is quite inappropriate to the situation that actually confronts us today.

As the illnesses of childhood and the

acute epidemic diseases decline in frequency and severity, the chief health problems of the nation that emerge are those which cannot be attacked effectively by traditional methods of public health agencies. Aside from acute upper respiratory infections, the major disease load of our population today is contributed by heart disease, cancer, nephritis, cerebral vascular accidents, pneumonia, arthritis, diabetes, dental caries, psychoneuroses, defects of vision and hearing, and related conditions. For the most part, they are diseases of adult life, and particularly of the later years, to which age an increasing proportion of our population is surviving. Under the present state of knowledge these diseases can be controlled, or their effects mitigated, only through early diagnosis and adequate care. In great measure, therefore, public health of the future will be comprehensive medical care. Anything that tends to make medical care widely available to all the people should, therefore, have the support of public health agencies, even though their first concern is prevention. In addition medical care has humanitarian and economic values that qualify its provisions as a desirable social enterprise.

It is the opinion of competent authorities that a satisfactory service can be accomplished best through a comprehensive health program of nation-

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wide scope. This is not the place to review the reasoning and experience that lie back of this conclusion. One may simply point out that this conclusion appears to be extending widely throughout the nation, especially among organizations representing the recipients of service. Whatever may be the position of certain professional bodies, it seems altogether likely that sooner or later the nation will have the task of administering a program of universal prepaid personal health services.

Some of the bills now before the Congress place primary administrative responsibility on federal agencies, while others feature operation by state agencies, with the rôle of the federal government limited to allotting financial grants-in-aid. In any event, administrative agents at the state and local levels everywhere are needed and, indeed, are contemplated in bills of either type. It seems clear that state and local departments of health will be called upon to serve in the administration of this public service, because, first, they are in being; second, the purpose of medical care coincides with their basic interest; third, they are long familiar with health conditions and professional relationships in their states; and fourth, a great deal of technical competence is already represented in their staffs.

But we must face the question: Are health departments now prepared to assume this type of new responsibility? I think our state and local health officers, as a group, would be the first to say that at present they are not prepared. And yet opportunities to become prepared are widely available. They are available in an abundant literature in the field of medical economics, health insurance, and related problems covering the experience both in this country and abroad. They are available in courses of instruction at some of the schools of public health,

although existing courses require considerable alteration and expansion. But, most important, they are available through day-to-day observation and practical experience with medical care administration in state and local units throughout this nation. If the health officer will free himself from the inhibitions of the past and look around him, he will find numerous operating programs today where he and members of his staff can acquire experience in the administration of medical services. On this occasion I can do little more than enumerate the places where participation by public health personnel would be both profitable to them and beneficial to the services involved.

All states maintain hospitals for mental disorders, and the great majority operate institutions for tuberculosis. Despite the fact that tuberculosis is a communicable disease, fewer than one-half the state health departments have responsibility for operating such facilities. Only in West Virginia have steps been taken to place the mental institutions under public health authorities. By operating the state institutions, health agencies could acquire experience readily usable in general medical administration. Moreover, institutions of the types enumerated should be the centers from which their respective field programs radiate. Not being in control of such institutions, health departments lose the occasion for blending the preventive and curative elements of tuberculosis control and mental hygiene.

The most available opportunity for participation in general medical care administration is through the provision of medical services to the needy. Usually such programs are under the supervision of departments of public welfare, although there is a considerable dispersion of authority, in this field alone, among public and voluntary agencies of different types. The de-

livery of medical services associated with public assistance involves a great variety of tasks, from the approval of budgets covering medical costs to the payment of physicians for rendering direct medical services for welfare clients, or the actual operation of public general hospitals. In the majority of these programs, health departments give little assistance or consultation, and it is a common observation that many programs suffer from the lack of competent professional guidance. In a few places a new orientation is evident. Thus last year Maryland enacted a law transferring its medical responsibilities for the indigent to the State Department of Health. Virginia more recently has done something similar. And if it bears any special significance as the nation's capital, in the District of Columbia the supervision of all public medical service has been under the Department of Health for some years.

Many universities and colleges conduct student health services that provide fairly complete medical care. Departments of public health, both state and local, have little if anything to do with any of them. Health departments could learn much and at the same time make valuable contributions by becoming involved in these programs. Here prevention, care, and health education might be blended in an academic environment.

Medical aspects of the workmen's compensation acts are typically under state departments of labor or special compensation commissions. Yet there would seem to be no good reason why the certification of disability involved in these programs could not be handled, or at least participated in, by departments of public health. Likewise, health authorities should be of great assistance in passing on the adequacy or quality of care rendered to compensation cases. The enactment of a state law for dis-

bility benefits in Rhode Island a few years ago, and in California several months ago, opens up new opportunities for medical care administration; but, so far as I am aware, they have not been embraced by public health agencies. Under social insurance acts which compensate the worker who is unemployed because of sickness, there is, of course, constant need for medical certification of disability. This medical administrative task could and should be handled by departments of health, either as a direct responsibility or on behalf of the compensation authorities. Precedent can be found at the federal level for such assignment of responsibility.

The State of Washington has a special program of health services for the "Senior Citizens" of the State—i.e., all persons 65 years of age or over who are public assistance beneficiaries. This program of unusually comprehensive services is supported out of state revenue and is administered with the consultation of the State Department of Health. Such programs in time may extend to other states. The federal-state program of vocational rehabilitation represents another expanding field in which medical administration plays an important part. Today this work is under the supervision of state departments of education in nearly every state, with little if any participation or assistance by state departments of health. Such separation in health responsibilities again operates to the detriment of both programs. At the federal level, medical guidance has been effected through assignment of officers from the Public Health Service to the Office of Vocational Rehabilitation; this pattern might well be adopted in states by the corresponding state agencies.

A medical care program of special significance in rural areas is found in the prepayment health plans of the

Farm Security Administration. These prepayment plans, designed to spread the risk of medical care for low income farm families, and operating in over 1,100 counties throughout the nation, have been organized and supervised by personnel of the U. S. Public Health Service assigned to the Department of Agriculture. Another agency in the Department of Agriculture conducts a special tax-supported program of medical services for migratory farm laborers which has operated in about 30 states. In both of these programs, assistance has been obtained occasionally from health departments, in so far as the provision of preventive measures was concerned, but the characteristic attitude toward the treatment services offered has been one of "hands off," because of the supposedly close resemblance of these two programs to so-called "socialized medicine." Again, lack of participation by health departments works to the detriment of both the agricultural and the health features of these programs.

Over a number of years the federal government has provided comprehensive medical care for designated beneficiaries. These programs afford a medium for state and local participation. The program of the Office of Indian Affairs especially could be adapted to coöperative endeavor because many Indians are dispersed among the general population. Efforts at joint action so far have been desultory since no state has been either willing or able to provide the full range of medical benefits included in the federal program.

Before World War II has been formally concluded, more than 20,000,000 persons will have acquired veterans' rights and this creates another tremendous responsibility in the way of medical care. The medical program of the Veterans Administration, with its special attention to service-connected disabilities,

is a direct federal responsibility, although there is a growing tendency to utilize local resources. The veteran has, of course, many needs beyond the care of his service-connected disabilities. There is no good reason why health departments should not be in a position to advise or otherwise assist in the various programs having health implications that are being developed for veterans by a number of agencies.

Then there are all the voluntary prepayment plans which have attained considerable momentum in recent years. Group hospitalization plans under the Blue Cross emblem, the prepayment plans of consumer groups like fraternal orders, farmers' associations or labor unions, industrially sponsored plans, insurance plans promoted by medical societies—all of these represent an important movement in which departments of public health have in the past played little part. While direct management of such voluntary programs must obviously be under nonofficial auspices, there is wide opportunity for public health officials to act as consultants or members of boards of directors in such plans. In this way some coördination between treatment and preventive services might be achieved. As yet no one knows the extent to which some of the ordinary public health services might be discharged through voluntary prepayment hospital or medical service plans. Another problem from the standpoint of public administration is to develop controls over content and quality of service within the terms of the voluntary plan contract. Mere actuarial soundness, now the main requirement, is of only minor consideration in the usual "service plan" (as distinguished from indemnity plans), while the content and character of the service itself is of first importance. In this determination health departments might perform an important public function.

A strong stimulus to participation of public health agencies in planning hospital construction has been given by the introduction in Congress of the National Hospital Survey and Construction Bill. This calls for the designation of a state agency which will be responsible for developing state-wide "master plans," determining overall needs, and designating places where new hospitals should be built. In preparation for the passage of such a bill, which would provide extensive grant-in-aid funds for hospital construction over the next five years, some 15 states have passed measures which call for state-wide surveys of hospital needs, and about 25 additional states and territories have taken other actions. Under these acts the health department is generally involved either as the executive agency or in an advisory capacity. Thus it is apparent that legislative authorities are disposed, more and more, to assign responsibilities for different elements of medical care to the health department. They have reached the obvious conclusion that the health department already is or should become the center of competence in this field.

The task of distributing vast quantities of surplus war property presents another, but perhaps temporary, phase of medical care administration. This program calls for the coöperation of state and local departments of health if full advantage is to be taken of the opportunities for furnishing hospitals and health centers with needed medical equipment and supplies, and for improving sanitation facilities. While the volume of surplus property, especially consumer goods, actually coming into the possession of health and medical agencies may be disappointing, this may in some measure be attributed to two factors: the absence of satisfactory inventories of need, and the inability of claimants to pool their needs in advance, thus being in position to take

possession of articles promptly in the kinds and quantities that are available.

The entire task of encouraging a better distribution of physicians and other medical personnel, particularly between urban and rural areas, represents a striking instance where health departments can play a key rôle in the medical care field. This is a problem of long standing which the adverse economic position of rural areas continues to aggravate. Not less than four states—North Carolina, Virginia, Georgia, and Kentucky—seriously contemplate or have enacted laws providing medical fellowships to young men and women who will agree to practise in a designated rural area for a certain number of years after graduation. Determination of areas of doctor shortage, at least in the case of North Carolina, is a responsibility placed upon the State Department of Health, so that this agency finds itself entrusted with another type of medical care function. The problem, however, is by no means limited to the four states that have overtly recognized it. Other states may be expected to take even more aggressive steps and their health departments should anticipate the need for action.

The list of medical care functions in which public health agencies might participate could be extended, but the length to which I have gone may be sufficient to call attention to the opportunities at hand. At any rate, there is no substantial reason why the enactment of measures providing for a comprehensive medical care program should find health departments totally unprepared for the tasks it may impose. The varied programs, which are daily increasing in number and complexity, give official public health agencies wide opportunity to acquire some degree of "know how" in the field of medical care administration. They provide opportunity to gain intimate knowledge of

the complex relationships involved in delivery of modern medical service. Economic relationships with physicians, dentists, hospitals, nurses, optometrists, laboratories, and other vendors of medical care are daily aspects of these programs. Definitions of eligibility for medical care; authorization for service where necessary; determination of the scope of benefits allowable within the funds at hand; allocation of funds to special accounts for different classes of service; development of agreements with professional bodies, including methods of payments, control over abuses, referral to specialists and to resources outside the local area; education of patients concerning benefits and limitations which may be necessary; the preservation and encouragement of a high quality of service; maintenance of records, and numerous other administrative matters—these problems in varying degrees and forms characterize medical care programs operating today throughout the nation under different auspices. There is hardly any item under the provisions of such a measure as the National Health Bill of 1945 on which knowledge could not be gained, if today health officials were, figuratively speaking, to look in their own back yards for the experience.

Should health departments be so cautious or obtuse as not to accept the challenge, responsibility for administering overall medical care programs will of necessity fall into other hands. It may fall under the aegis of welfare departments; it may be sponsored by professional bodies as producer operations; or it may be set up under some totally new public agency. If responsibility falls to the welfare department it will be in the hands of an agency with the most humanitarian intentions, but one not skilled by tradition or current operation in the field of health services. If responsibility falls to the professional societies it will be in the

hands of groups who are technically informed on service content, but being a vested interest, one would not expect them to be actuated primarily by considerations of public need, nor particularly skilled in socio-economic affairs. If responsibility falls to some new public agency, the administration of medical care will be rendered more unwieldy than ever in relation to a total health program. In none of these three possibilities will the ideal of intimate coordination with preventive programs be achieved. Should any of these three possibilities materialize, the program remaining to the public health agency would be dwarfed by comparison into insignificant proportions.

It is in the public interest, therefore, that medical care functions be developed in public health agencies. Knowing health departments so well, we in public health work are apt to regard them as wholly unprepared for the assumption of such a great new task, but they are strong and competent as compared with other aspirants. Everyone can be confident that if the task were put upon their shoulders they would learn how to bear it. On this very point, no better phraseology is to be found than in the official statement of the American Public Health Association with respect to the part of health agencies in a national health program. It was adopted by the Governing Council October 4, 1944:

A single responsible agency is a fundamental requisite to effective administration at all levels—federal, state, and local. The public health agencies—federal, state and local—should carry major responsibilities in administering the health services of the future. Because of administrative experience, and accustomed responsibility for a public trust, they are uniquely fitted among public agencies to assume larger responsibilities and to discharge their duties to the public with integrity and skill. The existing public health agencies, as now constituted, may not be ready and may not be suitably constituted and organized, in all cases, to assume all

of the administrative tasks implicit in an expanded national health service. Public health officials, however, should be planning to discharge these larger responsibilities, and should be training themselves and their staffs. This preparation should be undertaken now because, when the public comes to consider where administrative responsibilities shall be lodged, it will be influenced in large measure by the readiness for such duties displayed by public health officers and by the initiative they have taken in fitting themselves for the task.

The statement just quoted is sound today, and it is even more applicable now than when it was adopted. Then we were in the middle of a great war that had drawn into the armed forces a high proportion of active public health workers. Now we are in position to fill those gaps. The serious defects in our organization for medical care and the consequent inadequacies of service have become items of common knowledge.

Likewise, the applicability of insurance in meeting the unpredictable costs of illness now finds general acceptance; the only question at issue is whether it shall go forward under private auspices or within the framework of government. Even the most ardent advocates of voluntary schemes openly admit that part of the burden must be assumed by government, and perhaps an element of compulsion may be necessary to assure full and continuous coverage of the population. As a matter of fact, bills are now before the Congress for extending health services through each of these devices; one contemplates a national compulsory health insurance system while the other would foster voluntary systems, but would subsidize them for the purpose of covering persons unable to meet regular premium costs. No stretch of the imagination is needed to anticipate that measures of similar intent will continue

to come before state legislatures in future sessions, as they have in the past.

Despite their timidity and backwardness, health departments are coming to be recognized as the appropriate agencies for administering those elements of medical care that may be accepted as a public responsibility. They can now enter the field with reasonable assurance, in most areas, that they are welcome and will be fully accepted when their interest and competence have been demonstrated. Lacking precise information on some technical matters, they need not feel embarrassed provided they are willing to learn. A vast body of basic facts and operating experience has been acquired by governmental agencies and voluntary insurance plans. Much of this information is available through published documents, but in addition personal contact should be made with individuals whose position has been established in one or another aspect of this broad field.

The U. S. Public Health Service began as the medical care organization of the federal government. In fact it operated one of the early, if not the first compulsory health insurance schemes in the world. This was established to assure care for members of the merchant marine. Throughout its existence the Service has been in close touch with organized plans for providing medical service. When confronted with the need for counsel or support in any aspect of medical care administration, state or local health agencies may call on the U. S. Public Health Service. Within the limits of available resources, this aid will be given as another element in its traditional plan of developing and supporting state and local health organizations.

# Varieties of Coccidioidal Infection in Relation to the Epidemiology and Control of the Diseases<sup>\*</sup>

CHARLES EDWARD SMITH, M.D., F.A.P.H.A., AND  
RODNEY R. BEARD, M.D., F.A.P.H.A.

*Department of Public Health and Preventive Medicine, Stanford University  
School of Medicine, San Francisco, Calif.*

MAJOR E. G. WHITING, M.C., AUS  
*Berkeley, Calif.*

AND

MAJOR H. G. ROSENBERGER, M.C., AUS  
*Whittier, Calif.*

FOR over forty years the only recognized form of coccidioidal disease was the usually fatal progressive coccidioidal granuloma. Then the recognition by Gifford and Dickson<sup>1-4</sup> that *Coccidioides immitis* causes an illness which is benign and self-limited enormously broadened this concept. Their addition of coccidioidal erythema nodosum ("Valley Fever") created a true disease spectrum.<sup>5, 6</sup> However, many questions were raised in the process. Coccidioidin skin testing had shown that a large proportion of the individuals of the southern San Joaquin Valley reacted, yet the coccid-

oidal erythema nodosum ("Valley Fever") of Gifford and Dickson was certainly not universal. Meyer,<sup>7</sup> commenting on the apparent susceptibility of newcomers and immunity of residents, speculated on the likelihood of subclinical immunizing infection. Subsequent studies have indicated that the disease spectrum is very broad and that the segment in which erythema nodosum occurs is only a small part of clinically manifest benign coccidioidomycosis. Moreover, experiences in our own laboratory group indicated that the infection could be acquired without any symptoms whatsoever. Thus coccidioidomy-

<sup>\*</sup> From the Commission on Epidemiological Survey of the Board for the Investigation of Epidemic Diseases, Preventive Medicine Services, Office of the Surgeon General. The special studies on coccidioidomycosis have been conducted in the Department of Public Health and Preventive Medicine, Stanford University School of Medicine with the first five months of the study supported by a grant from the Rosenberg Foundation. The cooperative nature of the study was indicated in a previous paper<sup>10</sup> in which appreciation was expressed to Dr. Francis G. Blake, Generals S. Bayne-Jones, and Charles R. Glenn; Colonels Bloyce A. Britton, J. R. Copenhaver, Robert E. Estill, M. G. Healy, A. L. Jennings, Neill Johnson, Russel V. Lee, Edward H. Padden, Albert Phillips, M. V. Prescott, John Roberts, Otis B. Schreuder, D. D. Todorovich;

Lieutenant Colonels E. C. Donohoe, A. F. Dörner, Richard D. Evans, Ian B. Hamilton, J. Murray Kinsman, Harris D. Loe, Russell W. Mapes, P. M. Pederson, Benjamin Siebenthal, Roger E. Weismann; Majors Maurice P. Foley, Clarence J. Keefe, Edward J. Hall, Robert G. McCurdy, David L. Thurman, Harry E. Thompson, Harvey A. Woods; Chief Warrant Officer Melburn Biddulph; Lieutenants Wilhurt M. Fitzpatrick, and George Schroeder; Master Sergeant Howard Sehlin; Sergeants C. O. Castledine, and Robert A. Kunde. In addition there were a very large number of others, Commandants, Ward Officers, Executive Officers, and commissioned and enlisted personnel, without whose whole-hearted cooperation these studies would have been impossible.

cosis would fall in line with other infections *inapparentes* as first designated by Nicollé.<sup>8</sup> The disease spectrum, even including benign manifestations, would then constitute only a part of the entire infection spectrum. The quantitative composition either of the disease or of the entire infection spectrum was an enigma. One tentative suggestion was made<sup>9</sup> that as newcomers acquired their infections perhaps 1 in 20 developed erythema nodosum. However, without a controlled group which could be studied over a period of years only conjecture was possible.

The location of Army air fields in the San Joaquin Valley to take advantage of the unusually fine meteorological and topographic conditions in year round training provided an opportunity for the requisite intensive study. While even "permanent" personnel moved through these stations at a rapid pace, enough remained a sufficient length of time to permit an evaluation of the infection spectrum. In a subsequent paper a discussion of the clinical manifestations will be presented.

As has previously been described,<sup>10</sup> the permanent personnel of four San

Joaquin Valley Army Air Fields were routinely coccidioidin tested on their arrival at their stations. The negatives were retested periodically. Those who reacted at their retest were carefully interrogated as to any interim illness, and their form 52A infirmary records and any hospital records were inspected. If they gave no history of an illness which could be suspected as coccidioidin, they were classed as "inapparent" infection. If they had an illness such as "flu" (when there was no epidemic influenza) or pleural pain suspicious of coccidioidomycosis but did not report for medical attention, they were classed as "atypical" or "subclinical" cases. If they had these symptoms and reported to sick call but were not diagnosed as coccidioidin, they were classed as "missed" cases. "Clinical" cases were the patients who were correctly diagnosed. Only the "clinical" cases present at the Fields at the time of the retests were compared with the other categories. Special note was made of erythema nodosum. Because only "inapparent" infections and possibly some "atypical" cases were revealed at Merced and these in very small numbers,<sup>10</sup> the final comparison was

TABLE 1  
Distribution of Primary Coccidioid Infections by Type  
at  
Minter, Gardner, and Lemoore Army Air Fields  
July 1, 1941, to December 31, 1945

Field	Diagnosed Cases			Missed and Subclinical Infections			Inapparent Infections		Total Number of Infections
	No.	Per cent of Infections		No.	Per cent of Infections		No.	Per cent of All	
		With Symptoms	All		With Symptoms	All			
Minter (1941-1945)	171	59.6	26.5	116	40.4	18.0	359	55.6	646
Gardner (1941-1944)	108	64.3	25.0	60	35.7	13.9	265	61.1	433
Lemoore (1942-1945)	53	58.2	19.5	38	41.8	14.0	181	66.5	272
Total	332	60.8	24.6	214	39.2	15.8	595	59.6	1,351



restricted to Minter, Gardner, and Lemoore Fields. The negative results at Merced served as a control, establishing that the initial testing and subsequent retesting were valid procedures.

In Table 1 are presented the data showing the distribution of 1,351 coccidioid infections. One observes that only approximately one in four of the infections was diagnosed while approximately 60 per cent were symptomless. Actually, only 60 per cent of those with clinically manifest disease were detected as clinical cases. The remaining 214 with symptoms but not diagnosed were approximately equally divided between those missed by the doctors and those who "toughed out" their illnesses. The close approximation of the distribution in the various fields is further evidence of the validity of these observations. Broken down by years, the proportion of inapparent infections was also constant but there was an increasing proportion of clinically diagnosed cases. In the first year the percentages of diagnosed disease ran 15.2 (Minter), 15.2 (Gardner), and 15.8 (Lemoore). The "atypical" ("subclinical") and "missed" cases were reduced and contributed to the proportion of clinical cases as the succeeding groups of medical officers became more skilled in diagnosis and as the personnel became increasingly aware of "Valley Fever."\* Several of the personnel who developed their clinical manifestations while on furlough or leave made their own diagnoses, usually being unable to convince the physicians whom they consulted until they returned to their home fields.

The frequency of coccidioid erythema nodosum or erythema multiforme, the true "Valley Fever" of Gifford and Dickson, warrants special

attention. Not only is it important historically, but also does it constitute a clinical picture sufficiently spectacular not to be overlooked. Recognized readily, it may be used as an index of infection, if an appropriate factor relating it to the other forms of the infection can be established. Of course, even in known coccidioid endemic areas not all erythema nodosum is coccidioid. Out of 453 cases of erythema nodosum<sup>9</sup> in the San Joaquin Valley 432 (95 per cent) were coccidioid while 11 of the remainder were probably tuberculous, and the cause of the other 10 not determined. In our current studies on several occasions erythema nodosum appeared during the course of sulfonamide therapy, and when the patient had a preceding atypical pneumonia which failed to respond to chemotherapy, the clinical picture mimicked coccidioid erythema nodosum. However, the absence of coccidioidin sensitivity and coccidioid serology and prompt disappearance of the lesions on cessation of the drug ruled out coccidioidomycosis. Therefore, in any attempt to use the criterion of erythema nodosum as an index of coccidioidomycosis the etiological proof of each case must be established carefully.

In Table 2 is presented the frequency of erythema nodosum or multiforme. The proportion in total infections was 4.6 per cent, ranging from 4.0 per cent at Lemoore to 4.9 per cent at Minter. This closely approximates the crude estimate of 1 in 20 previously made.<sup>9</sup> It also checks with the 4.4 per cent incidence of erythema nodosum occurring in the Willett and Weiss<sup>11</sup> series of 135 infections. One notes that 11.4 per cent of all those having symptoms had erythema nodosum or multiforme, and 18.7 per cent of those with clinically diagnosed coccidioidomycosis had these skin lesions. Occasionally confusion has arisen between infection

\* While "Valley Fever" originally meant coccidioid erythema nodosum, its popular use has broadened to include all clinically manifest coccidioidomycosis.

and disease. While approximately 5 per cent of our coccidioidal infections had erythema nodosum, 20 per cent of the clinically diagnosed cases had the lesions. In the series of 85 clinical cases reported by Goldstein and McDonald,<sup>12</sup> 17, or exactly 20 per cent, had these manifestations. The series of Willett and Weiss<sup>11</sup> and of Goldstein and Louie<sup>13</sup> and Goldstein and McDonald<sup>12</sup> as well as the great proportion of ours were in males. The predilection of females for erythema nodosum in coccidioidal infections was previously noted.<sup>9</sup> The ratios as given above would be applicable only for males, or possibly children among whom the increased incidence of erythema nodosum in females is not so marked.<sup>9</sup>

In 1943 members of the Women's Army Corps were assigned to the Fields and provided a group for comparison. However, their numbers were small, and, because they moved through so rapidly, there were a total of only 41 infections for comparison. Ten, or one-quarter, had erythema nodosum or multiforme (Table 3). Also, one-half of the clinically diagnosed female patients had erythema nodosum. One notes the much higher proportion of clinically diagnosed cases and smaller proportion of inapparent infections in

TABLE 2  
*Frequency of Erythema Nodosum and Erythema Multiforme in 1,351 Coccidioidal Infections at Minter, Gardner, and Lemoore Army Air Fields, July 1, 1941, to December 31, 1945*

Field	No.	Erythema Nodosum or Multiforme		
		Per cent of Infections		All
		Diagnosed Cases	With Symptoms	
Minter	32	18.7	11.1	4.9
Gardner	19	17.6	11.3	4.4
Lemoore	11	20.8	12.1	4.0
Total	62	18.7	11.4	4.6

the females. These differences reflect the frequency with which the allergic manifestations<sup>9</sup> convert what would otherwise have been unrecognized infections to spectacular, unmistakable clinical cases. One notes that when the females are eliminated from the computation the incidence of erythema nodosum in whites drops to 4.3 per cent which is even closer to the 4.4 per cent of Willett and Weiss.<sup>11</sup>

Another point of consideration is the effect of race on erythema nodosum. Negroes came to the Fields in 1941, but remained in any appreciable numbers only at Minter Field. They provided 92 infections for comparison (Table 4). In none did erythema nodosum occur.

TABLE 3  
*Distribution of Primary Coccidioidomycosis in Whites by Sex and Type at Minter, Gardner, and Lemoore Army Air Fields July 1, 1941, to December 31, 1945*

Sex	Diagnosed Cases			Missed and Subclinical Infections			Inapparent Infections			Erythema Nodosum			Total Number of Infections
	No.	Per cent of Infections		No.	Per cent of Infections		No.	Per cent of Infections		Per cent of Infections			
		With Symptoms	All		With Symptoms	All		All	Diagnosed Cases	With Symptoms	All		
Females	20	80.0	48.8	5	20.0	12.2	16	39.0	10	50.0	40.0	24.4	41
Males	285	58.5	23.4	202	41.5	16.6	731	60.0	52	18.2	10.7	4.3	1,218
Total	305	59.6	24.2	207	40.5	16.4	747	59.4	62	20.3	12.1	4.9	1,259

TABLE 4  
*Distribution of Primary Coccidioidomycosis in Males by Race and Type*  
at

*Minter, Gardner, and Lemoore Army Air Fields*  
*July 1, 1941, to December 31, 1945*

Race	Diagnosed Cases			Missed and Subclinical Infections			Erythema Nodosum						
	Per cent of Infections			Per cent of Infections			Inapparent Infections		Per cent of Infections			Total Number of Infections	
	No.	With Sympt-oms		No.	With Sympt-oms		No.	All	No.	Diag-nosed Cases			
		All	Sympt-oms		All	Sympt-oms				All	Sympt-oms		
Negro	27	79.4	29.3	7	20.6	7.6	58	63.1	0	0	0	0	92
White	285	58.5	23.4	202	41.5	16.6	731	60.0	52	18.2	10.7	4.3	1,218
Total	312	59.9	23.8	209	40.1	16.0	789	60.2	52	16.7	10.0	3.9	1,310

This coincides with experience in 432 civilian cases of coccidioidal erythema nodosum in which none were in Negroes.<sup>9</sup> Willett and Weiss<sup>11</sup> reported two Negroes with erythema nodosum in their series, both having mixed ancestry. Thus, while it may occur, erythema nodosum is much less frequent in the Negroes. Including the colored, our overall male erythema nodosum proportion was just under 4 per cent. As there were no female Negroes in the groups exposed to infection, it was not possible to determine whether sex or race would have dominated with regard to predilection for erythema nodosum.

The cause of real concern in coccidioidomycosis is whether coccidioidal granuloma may ensue. Before we attempt to estimate frequency of dissemination, certain other aspects should be considered. First of all, when do the infections disseminate? If, as in tuberculosis, progressive disease occurs years after infection is acquired, then observation for months or even a few years is inadequate. In a subsequent paper we shall review the matter of pathogenesis. Suffice it to say that of the 12 disseminations we encountered, one occurred within 12 days of onset, another 17 days after onset, 4 more within 3 weeks, 2 more within 1 month (a total

of 8 of the 12 within 1 month), 2 more within the 2nd month, 1 more in the 3rd, another within 3½ months, and the longest interval was 4 months after the onset of the initial illness. The sequence of events in the last patient is not clear as he was an "atypical" case (did not report when he was ill with his initial infection in August). When he was seen with meningitis in December, he was not oriented. Apparently there had been an interval of several months (four at a maximum) in which he was symptomatically well. Whether his sedimentation rate and serology would have given clues to his future trouble one cannot say: The 2 with the next longest intervals continued to have occasional fever, elevated sedimentation rates and their titers of complement-fixation steadily rose so that we feared and warned against trouble.

It is thus apparent that most of the disseminations occurred during the course of the initial illness and in none was there a long latent period. This is also the experience of the entire Western Flying Training Command.<sup>14</sup> While our opportunity of following those who were infected at an individual installation was frequently interrupted, others infected elsewhere transferred in so that a minimum of one-quarter of the personnel were coccidioidin reac-

tors. However, the only disseminations were in those recently infected. Moreover, our responsibility for performing the serological tests for the entire Training Command, and the close liaison with the Training Command would have assisted in detecting disseminations elsewhere. We can feel reasonably sure that a dissemination years later must be very unusual. Thus the twelve disseminations which we note here probably constitute a fair basis for calculating probabilities of developing coccidioidal granuloma.

However, other aspects must also be considered. Sex plays an important rôle in coccidioidal disseminations. The pioneer workers in the field recognized the predilection for males. When Wolbach<sup>15</sup> reported the 24th coccidioidal granuloma patient, he emphasized the fact that this was the first female. Beck<sup>16</sup> reported the coccidioidal granuloma sex ratio as nearly 6 males : 1 female while Gifford and her associates<sup>17</sup> found their ratio was approximately 4 males : 1 female. The belief prevailed that coccidioidal granuloma was more frequent in males because males were more often infected. However, in an unselected series of 432 erythema nodosum patients subsequently assembled,<sup>9</sup> there were over twice as many females as males. Coccidioidin testing carried out in the Kern County schools showed no difference in sex or race. None of the infections acquired by females in the San Joaquin Valley Army Air Fields disseminated, but the number infected was so small that none would have been anticipated were the white male ratio applicable.

While our estimates will be confined to males, we must take into consideration the factor of race. Every reported series of coccidioidal granuloma patients indicates the high proportion in Negroes, Mexicans, and Filipinos. The most useful comparison is that by Gifford and her associates<sup>17</sup> wherein they pointed

out that the Caucasians comprising 87 per cent of the population of Kern County contributed 41 per cent of the total cases while the non-whites with only 13 per cent of the population provided 59 per cent of the cases. Estimated on a case rate per population basis, the Mexican rate was 3.5 times, the Negro rate was 14 times, and the Filipino rate 180 times the white. Their coccidioidal death rates per 100,000 population were for the Mexicans 5 times, the Negroes 23 times, and the Filipinos 192 times that of the whites.

Therefore in estimating the disseminations in our males with coccidioidal infections it is necessary to consider our Negroes separately from our whites. There were so few Mexicans or other groups that they are included with the whites. There were 710 clinically diagnosed cases of coccidioidomycosis in white males of the four Army Air Fields (the few recognized at Merced, acquired elsewhere, being included here). Using the factor 23.4 per cent (Table 4) as a means of calculating the total number of infections which these diagnosed cases represented, the estimate would be 3,034. Of the 710 diagnosed cases, 110 had erythema nodosum. Table 4 indicates that 4.3 per cent of the infections in the white males occurred with erythema nodosum, so the 110 would represent 3,024 coccidioidal infections. The estimates check quite closely. Eight of our whites had disseminated infections representing 1.1 per cent (1:90) of the clinically diagnosed cases, and 0.26 per cent (1:380) of the total infections. Three of the 8 died.

In the colored group there were 34 clinically diagnosed cases. It is of interest that, as Table 4 indicates, the proportion of inapparent infections is similar in the two races. The proportion of clinically recognized infections is slightly higher despite the absence of attention-arresting erythema nodosum.

We cannot calculate number of infections on the basis of the erythema nodosum ratio, but as 29.3 per cent of the total infections were clinically diagnosed, the 34 cases would represent 116 infections. In this group 4 disseminations (2 fatal) occurred. This gives an incidence of disseminations in 12 per cent (1:8) of the cases, and 3.4 per cent (1:29) of the infections. The disseminations in the Negroes were over 10 times as frequent as in whites, both with respect to diagnosed cases and total infections.

There have been few instances of sufficiently large series to permit comparisons with our estimates. In the epidemic of coccidioidomycosis involving an armored division reported by Goldstein and Louie,<sup>13</sup> there were 17 cases of erythema nodosum or multiforme. Using our factor of 4.3 per cent, this would represent 395 infections. There were 75 clinically diagnosed cases, which with our factor of 23.4 per cent would indicate 320 infections. There was actually one dissemination. Our figure of white males was 1 dissemination in 90 cases and in 380 infections. Willett and Weiss<sup>12</sup> had 49 clinical cases in Negroes with 4 disseminations, or approximately 8 per cent. They commented on their almost "unbelievably high" rate of dissemination, but it agrees relatively well with our own estimate of 12 per cent. During the same exposure none of their 34 whites who underwent clinical infections disseminated. For the entire Western Flying Training Command, Lee<sup>14</sup> and Jamison<sup>18</sup> suspect even a higher risk for the Negro.

#### COMMENT

The fact that 60 per cent of coccidioid infections are symptomless places them with tuberculosis, diphtheria, brucellosis, and most other infections in which overt disease is the exception. The infection spectrum is very broad,

proceeding from completely inapparent infections through those with mild symptoms which are rarely diagnosed, on to those with full-blown disease: malaise, chills, fever, pleural pain, cough, headache. At the extreme end of the spectrum is disseminated or progressive disease (coccidioid granuloma) with a case fatality of 30 to 60 per cent. Even under the most favorable of circumstances, when diagnosis could usually be attained by noting the development of sensitivity to coccidioiden (personnel having been tested previously), only 20 to 25 per cent of the infections were clinically recognizable.

One segment of the infection spectrum is readily identifiable, the patients who have the allergic manifestations of erythema nodosum with or without erythema multiforme. This manifestation is infrequent in Negro males. In white males it occurs in approximately 4 per cent of the infections and 20 per cent of the cases. It is much more frequent in females, at least after puberty. In our series of white adult females, 25 per cent of the infections and 50 per cent of the clinical cases were accompanied by erythema nodosum or multiforme. Thus, while erythema nodosum provides a convenient red flag for estimating incidence of coccidioid infection, it is not applicable for Negroes and allowance must be made for the sex distribution of the group considered.

In considering the frequency of disseminated infections, allowance for the difference in sex and race is also necessary. In our group of white males, approximately 1 in 100 of those clinically diagnosed and 1 in 400 of those infected underwent dissemination. On the basis of a female dissemination frequency one-fifth as great, one would anticipate coccidioid granuloma in approximately 1 in 500 clinical cases and 1 in 2,000 infections of white females. Even more striking is the difference in race. The

Negro male dissemination ratio, both with respect to cases and to total infections, is approximately ten times that of white males. While the higher tuberculosis rate in Negroes is frequently attributed to inferior housing, nutrition, and medical care, in this Army group these factors were the same. The only valid difference lay in the genetic factors. In 1937 Meyer<sup>7</sup> anticipated these findings: "Just as in tuberculosis the ability to focalize the childhood tubercle is conditioned by genetic factors, so the resistance to generalization of fungus *coccidioides* is perhaps influenced by similar factors." Indeed, as time has gone on, it has become evident that progressive coccidioidomycosis is analogous with the overwhelming tuberculosis of infancy and very early childhood, rather than with the reinfection type of tuberculosis. Whites have not had the generations of experience with *Coccidioides* which would enable them to become better adapted to survival. Their contact with *Coccidioides* is as virgin as that of the Negro. However, one wonders if the many generations of experience with the parasitism of *Mycobacterium tuberculosis* may not have better equipped them to cope with the pathogenic saprophyte, *Coccidioides immitis*.

#### SUMMARY

By a program of systematically testing with coccidioidin new permanent personnel at four San Joaquin Valley Army Air Fields and periodically retesting those originally negative, the proportion of the various types of coccidioidomycosis was ascertained. Sixty per cent of 1,351 infections were symptomless and only 25 per cent of the infections were clinically manifest and diagnosed.

Erythema nodosum occurred in 4.6 per cent. It provides an index of infection, although care must be used, since it is found rarely in Negroes and there

is a marked difference between the sexes. For this group of coccidioidal infections in young adults it occurred in 24 per cent of the white females and in 4.3 per cent of the white males.

Disseminations occurred in about 1 per cent of the clinically manifest infections in the white males and one-quarter per cent of their total infections. The disseminations were over ten times as frequent in the Negro males, occurring in about 12 per cent of the clinical cases and in about 3½ per cent of the total infections.

#### REFERENCES

1. Gifford, M. A. San Joaquin Fever. *Annual Report Kern County Health Department for the Fiscal Year July 1, 1935, to June 30, 1936*, pp. 22-23.
2. Dickson, E. C. Valley Fever. *California & West. Med.*, 47, 3:151-155 (Sept.), 1937.
3. Dickson, E. C., and Gifford, M. A. Coccidioides Infection (Coccidioidomycosis). *Arch. Int. Med.*, 62, 5:853-871 (Nov.), 1938.
4. Gifford, M. A. Coccidioidomycosis in Kern County, California. *Proceedings of the Sixth Pacific Science Congress of the Pacific Science Association*, Vol. 5, pp. 791-796. University of California Press. Berkeley, 1942.
5. Meyer, K. F. Known and Unknown in Plague. *Am. J. Trop. Med.*, 22, 1:9-36 (Jan.), 1942.
6. Anderson, G. W., and Arnstein, M. G. *Communicable Disease Control*. Macmillan, New York, 1941, pp. 17-18.
7. Meyer, K. F. Discussion of paper by Dickson, E. C., Reference 2. *California & West. Med.*, 47, 3:155 (Sept.), 1937.
8. Nicollé, C., and Lebaillly, C. Les infections expérimentales inapparentes. Exemples tirés de l'étude du typhus exanthématique. *Compt. rend. Acad. de sc. L'Académie des sciences*, 165:890-891 (Apr. 14), 1919.
9. Smith, C. E. Epidemiology of Acute Coccidioidomycosis with Erythema Nodosum. *A.J.P.H.*, 30, 6:600-611 (June), 1940.
10. Smith, C. E., Beard, R. R., Rosenberger, H. G., and Whiting, E. G. Effect of Season and Dust Control on Coccidioidomycosis. In press, *J.A.M.A.*
11. Willett, F. M., and Weiss, A. Coccidioidomycosis in Southern California: Report of a New Endemic Area with a Review of 103 Cases. *Ann. Int. Med.*, 23, 3:349-375 (Sept.), 1945.
12. Goldstein, D. M., and McDonald, J. B. Primary Pulmonary Coccidioidomycosis. Follow-up of 75 Cases, with 10 More Cases from a New Endemic Area. *J.A.M.A.*, 124, 9:557-561 (Feb. 26), 1944.
13. Goldstein, D. M., and Louie, S. Primary Pulmonary Coccidioidomycosis. Report of an Epidemic of Seventy-five Cases. *Wet. Med.*, 4, 3:259-317 (Sept.), 1945.
14. Lee, R. V. Coccidioidomycosis: In the Western Flying Training Command. *California & West. Med.*, 61, 3:133-134 (Sept.), 1944.

15. Wolbach, S. B. Recovery from Coccidioidal Granuloma. *Boston Med. & Surg. J.*, 172, 3:94-96 (Jan. 21), 1915.

16. Beck, M. D. Coccidioidal Granuloma. California State Department of Public Health *Bulletin* 57, June, 1931.

17. Gifford, M. A., Buss, W. C., and Douds, R. J.

Data on Coccidioides Fungus Infection, Kern County, 1901-1936. *Annual Report Kern County Health Department for the Fiscal Year July 1, 1936, to June 30, 1937*, pp. 39-54.

18. Jamison, H. W. A Roentgen Study of Chronic Pulmonary Coccidioidomycosis. *Am. J. Roentgenol.*, 55, 4:396-412 (Apr.), 1946.

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## Streptomycin for Clinical Research Related to Tuberculosis

The American Trudeau Society, the medical section of the National Tuberculosis Association, will handle the distribution of a limited amount of streptomycin for clinical experiments in the treatment of tuberculosis. This announcement was made recently by Dr. H. McLeod Riggins, President of the society.

The object of these studies will be to determine the possibilities and limitations of streptomycin in the treatment of tuberculosis and to learn whether the drug is sufficiently effective to justify increased commercial production. The present high cost and limited quantity of the drug makes it impossible to supply many well qualified investigators or to assign it for individual cases regardless of the degree of urgency.

At the request of the Civilian Production Administration and a group of pharmaceutical manufacturers, Dr. Riggins has appointed a special committee to correlate carefully planned clinical research studies to be carried out in hospitals and sanatoriums designated by the Executive Committee of the American Trudeau Society. The chairman of this committee is Dr. H. Corwin Hinshaw, Mayo Clinic, Rochester, Minn., who has conducted studies in streptomycin for the past two years. He warns that it has not yet been sufficiently tested to warrant large scale production and use in the treatment of tuberculosis and emphasizes that it cannot be regarded as a substitute for present methods of sanatorium and surgical therapy.

# An Outbreak of Trichinosis in New York City

With Special Reference to the Intradermal and Precipitin Tests

HOWARD B. SHOOKHOFF, M.D., WILLIAM B. BIRNKRANT,  
M.D., AND MORRIS GREENBERG, M.D.

*Bureau of Preventable Diseases, Department of Health, New York, N. Y.*

DURING February, and March, 1945, New York City experienced the largest outbreak of trichinosis in the history of its Health Department. Eighty-four persons became ill with the disease as the result of the consumption of pork products supplied by a single wholesaler. We are reporting this outbreak, not only because of its size, but also because it has afforded an opportunity to study the utility of the intradermal and precipitin tests. Very few reports of the application of these tests in large outbreaks have appeared in the literature, and in some instances they were carried out late in the course of the illness. In this outbreak, the tests were made by or at the request of the attending physician during the actual illness as a method of clinical diagnosis, rather than as an afterthought. The results obtained give some idea therefore of the value of these tests to the diagnostician.

We have reviewed the outbreaks of trichinosis involving 20 or more cases reported since 1900. We were able to find accounts of 25 in the publications available to us. They are listed in Table 1.

## CIRCUMSTANCES OF THE OUTBREAK

On March 13, 1945, 3 persons in a family of 4 were reported ill with trichinosis. They had purchased mett-

wurst and blutwurst on February 16, and had eaten these products between that date and February 20. From March 13 through March 31, 81 other cases were found by the Health Department in individuals who had consumed pork products processed by the same wholesaler\* who had supplied the meat eaten by the first group of 3. These products were purchased from eight retailers, all supplied by that wholesaler, as well as from a retail outlet operated by the wholesaler. Fifty-three of the 84 cases were traced to a single popular retail store located in a section of the city which is frequented by persons of Germanic birth or descent.

The wholesaler prepared a variety of smoked pork products. Table 2 shows the type of pork eaten by the 84 persons who subsequently became ill. A number of individuals had eaten more than one type, but 50 of the 84 had consumed mettwurst. Investigation disclosed that the pork used in preparing the meats eaten had not been subjected to the freezing process recommended for pork products intended to be consumed uncooked. In the past the wholesaler had used pork maintained at 5° F. for 20 days. However, during the war period

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\*Thanks are due to Mr. Joseph Schiffrer of the Bureau of Food and Drugs for obtaining information concerning the wholesaler.



TABLE 1

*Outbreaks of Trichinosis Since 1900*

Year	Author	Place	Cases		Deaths	Cases		Source
			With Symptoms	Without Symptoms		Male	Female	
1914	McClure and Ware <sup>1</sup>	New Liberty, Iowa	28	2	0	15	15	Sausage cakes, raw ham
1922	Fuchs <sup>2</sup>	Erlangen, Germany	92	..	0	?	?	Sausage
1923	Heissen <sup>3</sup>	Karlsruhe, Germany	150*	..	1	?	?	Not stated
1926	Behr <sup>4</sup>	Vogtland, Germany	70*	..	5	?	?	Not stated
1928	McDonald and Waddell <sup>5</sup>	Albany, N. Y.	26	5	1	21	10	Sausage and salt pork
1929	Willett and Pfau <sup>6</sup>	East St. Louis, Ill.	21	..	1	9	6	Raw pork sausage
1930	Aldridge <sup>7</sup>	Pennsylvania	26	3	2	14	15	"Pork"
1930	Weitz <sup>8</sup>	Stuttgart, Germany	88	..	12	?	?	Polar bear meat
1933	Kilduffe, <i>et al.</i> <sup>9</sup>	Atlantic City, N. J.	19	3	1	12	7	Italian sausage
1935	Drake, <i>et al.</i> <sup>10</sup>	Portland, Me.	26	25	2	?	?	Home made sausage
1935	New York State Trichinosis Commission <sup>11</sup>	Niagara Falls, N. Y.	20	..	0	?	?	Italian sausage
1936	Barrett and Sears <sup>12</sup>	Rogers City, Mich.	32	..	0	?	?	Sausage
1936	Barrett and Sears <sup>12</sup>	Capac, Mich.	72	..	6	36	36	Sausage
1937	Hallen <sup>13</sup>	Lindesburg, Sweden	50	..	0	9	41	Sausage
1937	Ferenbaugh, <i>et al.</i> <sup>14</sup>	Waterbury, N. H.	57	7	0	64†	0	?
1937	New York State Trichinosis Commission <sup>11</sup>	Rochester, N. Y.	85	..	1	?	?	Sausage
1940	New York State Trichinosis Commission <sup>15</sup>	Bronx and Westchester, N. Y.	35	..	0	12	9	Teewurst
1940	Deadman and Wilson <sup>14</sup>	Hamilton, Ontario	23	..	0	7	14	Sausage
1940	Parrisius <sup>17</sup>	German Army, Norway	617	..	1	617†	0	Sausage
1940	Sheldon <sup>18</sup>	Wolverhampton, England	105	..	0	14	78	Sausage
1941	Bacon <sup>19</sup>	Birmingham, England	78	..	0	..	81%	?
1941	Davis and Allott <sup>20</sup>	London, England	26	..	1	20	6	Sausage
1941	New York State Trichinosis Commission <sup>15</sup>	Akron, Ohio	62	..	4	?	?	Sausage
1942	J.A.M.A. <sup>21</sup>	Ft. Stanton, N. Mex.	400	..	?	?	?	Sausage
1943	Vogel <sup>22</sup>	Rock County, Wis.	28	..	0	15	13	Summer sausage

\* Approximate      † Outbreak in a male population.

B. Saad (*Presse Med.*, 48:556 1940) discusses an outbreak of trichinosis in Beyrouth which was supposed to have involved 500 persons. However, L. Pigoury (*Bull. Soc. Path. Exot.*, 36:88, 1943; abstracted in *Trop. Dis. Bull.*, 42:400, 1945) states, "Only a few human cases were recorded in the 1939-1940 outbreak . . . Rumour magnified the extent . . ." This outbreak has been omitted from the table.

the refrigerating companies licensed to do that type of work had found it more profitable to use their facilities for other purposes, and consequently the practice of freezing the pork had been abandoned.

By the time the existence of an outbreak was recognized, it was impossible to obtain remnants of the meat actually consumed by those who became ill. A large number of samples of pork products subsequently distributed by

the same wholesaler were examined with negative results.

#### CHRONOLOGY AND INCUBATION PERIOD

With the exception of one case in which the accuracy of the history is to be doubted, all illnesses began between February 21 and March 31. The one exception gave the date of the onset as February 10. Of the 84 cases, 59, or 70 per cent, had their onsets between March 7 and March 15. The incuba-

TABLE 2  
*Type of Pork Product Eaten by Those Ill*

Food	Number of Cases
Mettwurst .....	50
Teewurst .....	12
Blutwurst .....	10
Jagdwurst .....	5
Bierwurst .....	2
Cervelat Sausage .....	2
Knockwurst .....	2
Schutzenwurst .....	2
Fleischwurst .....	1
Brotwurst .....	1
Braunschweig Sausage .....	1
Ham bologna .....	1
"Sausage" .....	6
Westphalian Ham .....	9
Pork chops .....	1
Chopped meat .....	1

tion period was determined in 62 cases and ranged from 2 to 35 days after the consumption of the pork. In 46, or 74 per cent, the first symptoms came on between 5 and 17 days after eating the pork. Figure 1 shows the distribution of the various incubation periods. In a number of instances, the same pork was eaten over a period of several days, and in such cases the median day was chosen as the day of consumption.

AGE AND SEX DISTRIBUTION

One-half of the cases occurred in persons in the third and fourth decades. Ten cases occurred in individuals under 20 years of age. The cases were

equally distributed between the sexes, 42 in males and 42 in females.

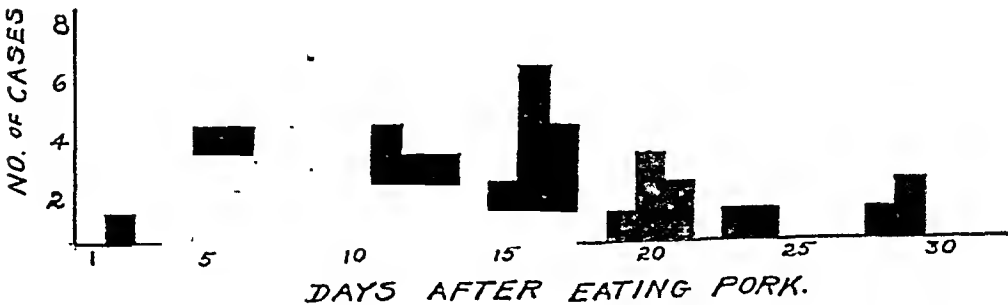
MORTALITY

There were no fatalities and, as a matter of fact, no cases that could be called critically ill. It seems to be characteristic of large-scale outbreaks of recent years, that there frequently is little or no mortality. Among the 26 recorded large outbreaks of the present century, including the one described here, certainly 12 and probably 13 had no fatal cases.

The 4 largest outbreaks, that is, those of more than 100 cases, had mortality rates of less than 1 per cent. No statement as to mortality is made in the report of the Fort Stanton outbreak<sup>21</sup> of 400 cases (crew of the S. S. Columbus). There were 10 outbreaks with between 50 and 100 cases each. In 5 there were no deaths; in the others the case fatality rates were 1, 6, 7, 8, and 14 per cent respectively. In the 12 outbreaks in which there were fewer than 50 cases, there were no deaths in 6. In the other 6 the death rates were 3, 4, 4, 4, 5, and 5 per cent.

These figures are in marked contrast to the epidemics of the last century. The case fatality rate in Wegleben<sup>23</sup>

FIGURE 1  
INCUBATION PERIODS.



was 16 per cent; in Hettstädt,<sup>24</sup> 17 per cent; in Hedersleben,<sup>25</sup> 30 per cent, and in Emersleben,<sup>23</sup> 16 per cent.

It seems that trichinosis was a much more severe disease during the last century that it is at present. One reason for this apparent change might be the fact that many mild cases and all subclinical cases went unrecognized until hematology had developed to the point where eosinophilia was readily determined. This would tend to exaggerate the case fatality rates. However, it is difficult to believe it could explain a drop from 15 per cent or more to less than 2 per cent in the majority of the large outbreaks.

It seems likely that the decline in the severity of epidemic, and probably also endemic, trichinosis can be explained by a reduction in dosage of infecting organisms in the average case as a consequence of public health measures and improved eating habits. The enforcement of measures designed to control trichinosis, though not 100 per cent effective, has resulted in a smaller number of infected animals and a lower degree of infection in any one animal. For this reason a given amount of infected muscle contains on the average fewer larvae than in former years.

As a result of the dissemination of knowledge concerning trichinosis, few people deliberately eat uncooked pork with the exception of those accustomed to eating sausage type products, so that sausage seems to have become almost the only important cause of large outbreaks. In the outbreak reported herewith, almost all the cases resulted from the consumption of one or another form of smoked sausage type product (Table 2). In 20 of the 25 outbreaks listed in Table 1 the cause was recorded. All but 2 of these were ascribed in whole or in large part to the consumption of some type of sausage.\*

The production of sausage results in

a dilution of the infected meat and consequent reduction in dosage in one or both of two ways: (1) the formula frequently calls for the incorporation of non-infected tissue such as liver, blood, and fat. (2) Sausage is usually made commercially from scraps of pork derived from a number of animals so that the muscle tissue of the infected animal occurs in small amounts in a large number of units of production. This dilution accounts for a reduction in concentration of larvae per unit of edible material and at the same time an increase in the number of infected units. The making of sausage is an effective way of distributing the meat of a single infected animal to a large number of individuals. Thus it is that sausage, if infected, is apt to cause large scale outbreaks of low mortality.

The one large 20th century outbreak definitely not due primarily to sausage was that in Stuttgart in 1930. It resulted from the consumption of steaks of bear meat, a concentrated type of product as compared with sausage, and

TABLE 3

*Frequency of the More Common Symptoms and Signs*

<i>Symptoms</i>	<i>Number of Cases Per cent</i>	
Lid edema .....	68	81
Muscle pains .....	61	72
Fever .....	60	71
Diarrhea .....	23	27
Headache .....	19	23
Abdominal cramps .....	19	23
Conjunctival hemorrhage .....	17	20
Nausea .....	11	13
Vomiting .....	8	10

\* In the case of the outbreak of 1937 at a C.C.C. camp at Waterbury, Vt. (Ferenbaugh, *et al.*), the source was considered to be a loin of pork. This was based on the fact that it was served at the only meal eaten by all those taken ill. Since the first case occurred only 3 days later and since the onset was with signs of the stage of dissemination of larvae (edema of the eyes), it would seem more probable that infection took place earlier. Sausage from an experimental farm was served on three different occasions from 6 to 17 days before the onset of the first case. Thus the sausage might have been the cause and it would not be necessary that all those ill should have eaten the same meal.

TABLE 4

*Order of Appearance of Cardinal Symptoms in 57 Cases*

<i>Cases with initial gastroenteritis</i> .....	7
Typical sequence of gastroenteritis, edema, and muscle pain.....	3
Gastroenteritis followed by edema and muscle pain occurring simultaneously.....	1
Gastroenteritis followed by edema; muscle pain absent.....	1
Gastroenteritis followed by muscle pain; edema absent.....	2
<i>Cases with onset characterized by periorbital edema</i> .....	45
<i>Gastrointestinal manifestations present in</i> .....	15
Simultaneous with appearance of edema.....	10
Subsequent to appearance of edema.....	5
<i>Muscle pain present in</i> .....	41
Onset simultaneous with edema.....	20
Onset subsequent to that of edema.....	21
<i>Cases without edema or initial gastroenteritis</i> .....	5
Fever and muscle pain occurring simultaneously.....	2
Fever alone .....	1
Muscle pain simultaneous with abdominal cramps and diarrhea.....	1
Muscle pain simultaneous with abdominal cramps.....	1

was the only recent large epidemic with a mortality comparable to that observed in the early outbreaks of the 19th century.

## SYMPTOMS

Table 3 records the main symptoms manifested by the 84 cases in the present outbreak. Edema of the eyelids, muscle pain, and fever were by far the commonest manifestations.

In Table 4 we have analyzed 57 cases in which chronological data were available, with respect to the order of appearance of the cardinal manifestations: gastroenteritis, edema, and muscle pain. Only 7 of the 57 cases had the classical initial gastroenteritis. In 3 of the 7, the classical sequence of gastroenteritis, edema, and muscle pain was noted; in 1, muscle pain and edema came on simultaneously; and in 3, either edema or muscle pain was lacking.

In 45 of the 57 cases, the prominent initial symptom was periorbital edema. In 10 of the 45, gastrointestinal symptoms accompanied the edema, and in 5 more, developed subsequent to the appearance of the edema. In 41 of the 45 cases, there was muscle pain. This

came on simultaneously with the edema in 20 instances and subsequent to the edema in 21.

There were 5 cases in which there was neither edema nor initial gastroenteritis. In 2 of these, gastrointestinal symptoms came on simultaneously with muscle pain.

From the experience in this outbreak it appears that the classical initial gastroenteritis occurs in only a small minority of cases. The absence of an initial gastroenteritis in a majority of cases was noted also in the Rock County, Wolverhampton, Birmingham, London, and Lindesberg outbreaks. In the present outbreak, gastrointestinal symptoms were present in 24 of 57 cases, but usually occurred simultaneously with or subsequent to edema and muscle pain. Muscle pain came on simultaneously with the edema or subsequent to it with about equal frequency.

## LABORATORY FINDINGS.

*Eosinophilia*.—Differential counts of the white blood cells were made in 72 of the 84 cases. The results are summarized in Table 5. In most instances, only a single count was made. In

those cases in which more than one determination was carried out, the highest figure obtained was used.

TABLE 5

*Eosinophile Counts in 72 Cases*

<i>Per cent Eosinophiles</i>	<i>Number of Cases</i>
5 to 9 .....	8
10 to 19 .....	24
20 to 29 .....	19
30 to 39 .....	10
40 to 49 .....	9
50 and over .....	2

Eosinophilia is best determined on the basis of the absolute number of eosinophiles per cubic millimeter. It is generally accepted that 400 per cu. mm. is the upper limit of normal. In many instances, however, we do not have available a total white blood count from which to derive the absolute figure. Consequently we must use the per cent of eosinophiles as determined by a differential count alone. It is fair to assume in these cases that no total count is less than 5,000 white blood cells per cu. mm. Thus, the finding of 10 per cent or more eosinophiles can be accepted as certain evidence of eosinophilia. On the other hand, eosinophilia cannot be ruled out when there are less than 10 per cent unless the total white blood count is known.

In 64 of the 72 cases there were 10 per cent or more of eosinophiles. But only 1 of the remaining 8 cases showed less than 5 per cent. In that case there were 3 per cent on the 8th day of illness and 6 per cent on the 23rd day. On the latter day, the total white count was 15,500, so that a true eosinophilia of 930 per cu. mm. existed.

The results of differential blood counts were recorded in 18 of the 25 outbreaks listed in Table 1. In 9 of the 18 outbreaks, all cases tested showed eosinophilia. In the remaining 9 outbreaks, the great majority of cases had eosinophilia.

It is generally accepted that determination of the eosinophile count is the most useful single laboratory test

for the early diagnosis of trichinosis. This is substantiated in the present outbreak. Of 6 counts done on the first day of illness, 5 were 10 per cent or more. Of 40 counts done during the first week, 34 were 10 per cent or more, and 39 were at least 5 per cent, a figure which would always be considered as a possible indication of increased eosinophiles. Thus, the vast majority of cases will show eosinophilia when they first come to the attention of the physician.

In the present outbreak, there were 10 cases which at some time had a count of less than 10 per cent eosinophiles. In all but one, it was a count done during the first 8 days of illness. The one exception was the case already mentioned in which a determination of the total white count demonstrated the existence of a true eosinophilia.

In those cases in which the first blood count is negative or borderline, the count should be repeated. When this is done, it will be rare not to find eosinophilia. Cases of trichinosis without eosinophilia have been reported<sup>20</sup> but they are so unusual that, in the absence of eosinophilia, the diagnosis of trichinosis should be doubted unless the infecting organism can be demonstrated.

*Precipitin Reaction*—Precipitin tests\* were performed on one or more occasions in 40 of the 84 cases. The results are summarized in Table 6. In only 2 cases were completely negative results

TABLE 6

*Results of Precipitin Tests*

*Where More Than One Test Was Done,  
Highest Titer Obtained Is Given*

<i>Titer</i>	<i>Number of Cases</i>
Negative .....	2
1:80 .....	0
1:160 .....	5
1:320 .....	5
1:640 .....	7
1:1280 .....	21

\* All precipitin tests were performed by Dr. Annis E. Thomson, Bacteriologist, Bureau of Laboratories.

obtained. In 5 cases a titer of 1:160 (doubtful positive) was recorded.

Of 7 cases tested during the first 8 days of illness, 2 were negative, one was positive at a dilution of 1:40, and the remaining 4 were definitely positive. Of 25 tests performed during the first 2 weeks of illness, 17 were definitely positive, and only 2 were entirely negative. The remainder were positive in low dilutions. The earliest positive precipitin test in this outbreak was found on the 7th day of illness. The titer was 1:1280.

In the Waterbury outbreak, 57 cases were tested and all were reported positive.\* Parrisius<sup>17</sup> reported all of 27 cases tested by serological methods positive. It is likely that practically all cases eventually develop positive precipitin reactions, but the finding may occur too late to be of practical clinical value. Nevertheless, the figures just given show that it is a test of definite value in confirming the diagnosis where there is a reasonable clin-

ical suspicion. It must be kept in mind, of course, that false positive tests are not infrequent and a positive test can be considered significant only when there is additional clinical evidence of the disease.

*Intradermal Reaction*—The skin test with the 1:10,000 dilution of trichinella antigen commercially available was made in 21 of the 84 cases. The results are summarized in Table 7. In 15 of these a positive test was eventually obtained, but in some instances only after repetition of the test. One case showed a questionable result. The remaining 5 were negative. On the first test, definite positives were recorded in only 11 of the 21 cases.

The earliest positive test was obtained on the 6th day of illness. Of 12 cases tested during the first 2 weeks, 3 showed immediate positive reactions, 1 a delayed positive, 1 a questionable reaction, and 7 a negative result. Of 18 tests done after the first 2 weeks, 13 were positive. In 1 case, clinically very typical, and of moderate severity, skin tests performed during the 2nd and 5th weeks after the onset of the illness and

\* The dilution considered diagnostic and the date of the test with relation to the onset of illness were not stated.

TABLE 7  
*Chronological Study of Skin Tests*

Case Number	Weeks After Onset							Later
	1	2	3	4	5	6	7	
7	P	..	..	..	..	..	..	..
9	..	..	..	..	..	..	N	..
21	..	..	N	P	..	..	..	..
22	..	..	P	..	..	..	..	..
29	..	N	..	..	N	..	..	N
30	N	..	..	P	..	..	..	P
32	..	..	P	..	..	..	..	..
33	..	N	..	..	..	..	..	..
41	..	..	..	P	..	..	..	..
44	..	..	P	..	..	..	..	..
45	..	DP	P	..	..	..	..	..
46	..	N	P	..	..	..	..	..
47	..	P	..	..	..	..	..	..
48	..	P	..	..	..	..	..	..
54	N	..	..	N	..	..	..	..
55	N	..	..	P	..	..	..	..
59	?	..	..	..	..	..	..	..
60	..	N	..	..	..	..	..	..
69	..	..	..	..	P	..	..	..
70	..	..	..	..	P	..	..	..
71	..	..	..	..	P	..	..	..

KEY: N = negative; P = immediate positive; DP = delayed positive; ? = doubtful

again 3 months after were all negative. These were observed for delayed as well as immediate reactions.

Because of the fact that it is frequently negative early in the illness, and may not become positive for several weeks if at all, the intradermal test for trichinosis is of distinctly limited value.

#### COMPARISON OF SKIN AND PRECIPITIN TESTS

It is usually stated that the skin test becomes positive in trichinosis during the 3rd week after infection. It is further stated that the precipitin test becomes positive at about the end of the 4th week of infection. These statements appear to give a false impression as to the relative value of the tests with respect to the promptness with which they are likely to become positive. Actually, in this outbreak, the precipitin test tended to become positive earlier in the illness than the skin test. Reference to Table 8 will show that in the 2nd week the precipitin is far more likely to give a positive result. In the later weeks of illness, the precipitin test is in general more often positive than the skin test.

intradermal negative, 6; precipitin positive, intradermal doubtful, 1; precipitin doubtfully positive (1:160), intradermal positive, 1.

It appears therefore, that if we must choose between the two tests for early diagnosis, the precipitin test would be the more useful. The precipitin test has an additional advantage in that it seems to have more appeal to the practicing physician. It will be noted that twice as many cases were tested by the precipitin method as by the intradermal method in this outbreak. And almost all of the skin tests were performed by Health Department physicians. It is much easier simply to take a specimen of blood and send it to a laboratory than to carry out the skin test, which requires more equipment, more time spent at the bedside, and, if there is no immediate reaction, a second visit to observe whether a delayed positive reaction occurs. Furthermore, the procedure of sending a test tube of clotted blood to a health department laboratory is a much more familiar one to the average physician.

While the skin test has a limited usefulness, it is by no means valueless.

TABLE 8  
*Comparison of Intradermal and Precipitin Tests*

Tests	Week of Illness											
	First			Second			Third			Fourth and Later		
	No.	Pos.	% Pos.	No.	Pos.	% Pos.	No.	Pos.	% Pos.	No.	Pos.	% Pos.
Precipitin	3	1	33	22	16	77	9	7	78	12	11	92
Intradermal	5	1	20	7	3	43	6	5	83	12	8	67

In 12 cases both the skin and precipitin tests were done simultaneously. In 2 cases the tests were repeated, so that a total of 14 simultaneous determinations of the precipitin and intradermal reactions were made in the 12 cases.

The results are as follows: both tests positive, 4; both tests negative, 2; precipitin positive or doubtful positive,

More false positive reactions occur with the precipitin test than with the intradermal test. The latter is therefore a supplementary test of distinct value. Furthermore, there was one case in this outbreak in which the precipitin was doubtful at a time when the skin test gave a distinctly positive reaction. It is desirable to use both tests, especially in doubtful cases.

**Biopsy**—In the present outbreak, no biopsies were performed. Contrary to the prevailing impression, muscle biopsy is a procedure which is of less utility in confirming a diagnosis of trichinosis than the tests already discussed. Since biopsy is not readily repeated, it must be delayed until the optimal time for getting positive results, namely the 4th week after the development of symptoms of generalization of the infection when the bulk of the larvae produced will have arrived at the muscles. It is an expensive procedure and disquieting to the patient. In the Rock County, Wolverhampton, Birmingham, German Army, Waterbury, Portland, Pennsylvania, Albany, and New Liberty outbreaks, a total of 61 biopsies were performed with only 39 positive results.

#### SUMMARY

1. An outbreak of trichinosis resulting chiefly from the consumption of uncooked sausage-type pork is reported; there were 84 cases and no fatalities.

2. The most common type of onset was with edema of the eyelids and fever. Gastro-intestinal symptoms occurred in a minority of the cases and the onset of such symptoms was usually simultaneous with or subsequent to the onset of edema. The classical prodromal gastroenteritis occurred in only 7 cases.

3. Eosinophilia was the most constant early laboratory finding. The precipitin test was found more useful than the intradermal test in diagnosis, since it became positive earlier in the average case.

4. The literature of trichinosis outbreaks of 20 or more cases since 1900 is reviewed. These are characterized by low case fatality rates, probably due to their causation by sausage, in which the infected material occurs in dilute form.

#### REFERENCES

1. McClure, C. W., and Ware, M. Trichinosis: Report of an Epidemic. *J. Iowa State M. A.*, 5:182, 1915.
2. Fuchs, B. *München. med. Wchnschr.*, 69:1336, 1922.
3. Heissen, F. Trichinosepidemie in Karlsruhe und Weingarten. *Deutsche med. Wchnschr.*, 50:948, 1924.
4. Bebr, W. Ueber das Verhalten des Blutbildes im Verlauf der menschlichen Trichinose. *Folia haemat.*, 36:25, 1928.
5. McDonald, E. P., and Waddell, R. C. An Epidemic of Trichinosis. *J.A.M.A.*, 92:449, 1929.
6. Willett, J. C., and Pfau, C. L. Trichinosis. An Outbreak Involving Twenty Cases and One Death. *J.A.M.A.*, 94:1060, 1930.
7. Aldridge, F. C. An Outbreak of Trichinosis in Pennsylvania. *Am. J. M. Sc.*, 181:312, 1931.
8. Weitz, W. Zur Klinik der Trichinose. *Klin. Wchnschr.*, 10:938, 1931.
9. Kilduffe, R. A., Barbach, S., and Merendino, A. G. A New Jersey Outbreak of Trichinosis with Report of a Case Complicated by Femoral Thrombosis. *Am. J. M. Sc.*, 186:794, 1933.
10. Drake, E. H., Hawkes, R. S., and Warren, M. An Epidemic of Trichinosis in Maine. *J.A.M.A.*, 105:1340, 1935.
11. Meat for Millions. Report of the New York State Trichinosis Commission. *Legislative Document No. 52*, 1941, pp. 52-54.
12. Barrett, C. D., and Sears, R. The Epidemiology of Trichinosis. *A.J.P.H.*, 28:706, 1938.
13. Hallen, L. G. Beobachtungen ueber eine Trichinosepidemie in Lindesberg (Schweden) Bericht ueber 40 Fälle. *Acta med. Scandinav.*, 94:355, 1938.
14. Ferenbaugh, T. L., Segal, L., and Schulze, H. A. A Trichinosis Epidemic of Sixty-four Cases. *J.A.M.A.*, 110:1434, 1938.
15. The Meat You Eat. Report of the New York State Trichinosis Commission. *Legislative Document No. 35*, 1942, p. 115.
16. Deadman, W. J., and Wilson, D. C. Report of an Outbreak of Trichinosis. *Canad. Pub. Health J.*, 32:513, 1941.
17. Parrisius, W. Erfahrungen während einer Trichinose Epidemie. *Deutsche Militärarz.*, 7:198, 1942.
18. Sheldon, J. H. An Outbreak of Trichiniasis in Wolverhampton and District. *Lancet*, 1:203, 1941.
19. Bacon, L. J. Trichinosis in Birmingham. *Brit. M. J.*, 2:909, 1941.
20. Davis, E., and Allott, E. N. Trichiniasis in Southeast London. *Lancet*, 2:396, 1941.
21. Interned Germans Are Ill from Trichinosis. *J.A.M.A.*, 118:910, 1942.
22. Vogel, T. L. Trichinosis Epidemic in Rock County. *Wisconsin M. J.*, 42:909, 1943.
23. Gould, S. E. *Trichinosis*. Charles C. Thomas, Springfield, Ill., 1945, p. 279.
24. Rupprecht, B. *Die Trichinenkrankheit im Spiegel der Hettstädter Endemie Betrachtet*. J. Hüttig, Hettstädt, 1864.
25. Kratz, F. *Die Trichinosepidemie zu Hedersleben*. Wilhelm Engelmann, Leipzig, 1866.



# Record Linkage\*

HALBERT L. DUNN, M.D., F.A.P.H.A.

*Chief, National Office of Vital Statistics, U. S. Public Health Service,  
Federal Security Agency, Washington, D. C.*

EACH person in the world creates a Book of Life. This Book starts with birth and ends with death. Its pages are made up of the records of the principal events in life. Record linkage is the name given to the process of assembling the pages of this Book into a volume.

The Book has many pages for some and is but a few pages in length for others. In the case of a stillbirth, the entire volume is but a single page.

The person retains the same identity throughout the Book. Except for advancing age, he is the same person. Thinking backward he can remember the important pages of his Book even though he may have forgotten some of the words. To other persons, however, his identity must be proven. "Is the John Doe who enlists today in fact the same John Doe who was born eighteen years ago?"

Events of importance worth recording in the Book of Life are frequently put on record in different places since the person moves about the world throughout his lifetime. This makes it difficult to assemble this Book into a single compact volume. Yet, sometimes it is necessary to examine all of an individual's important records simultaneously. No one would read a novel, the pages of which were not assembled. Just so, it is necessary at times to link

the various important records of a person's life.

The two most important pages in the Book of Life are the first one and the last one. Consequently, in the process of record linkage the uniting of the fact-of-death with the fact-of-birth has been given a special name, "death clearance."

## IMPORTANCE OF ASSEMBLING THE BOOK OF LIFE

There are many uses for the important records of each person, brought together as a whole. At times, even now, such a collection is of sufficient value that it is made at considerable cost in time and money. Usually, it is the individual who is made to do the work since he alone knows where his records are on file. It is much more difficult for any other person or organization to assemble the records of his life since no personal cross-index exists to lead one to all of a person's records. It is important to many people and organizations to be able to assemble this type of information easily and efficiently.

## IMPORTANCE TO THE INDIVIDUAL

Sooner or later most of us need to prove facts about ourselves. The most frequent facts are concerned with birth. Sometimes other facts are needed. Many of these are recorded in the vital records of marriage, divorce, adoption, legitimation, change of name, death and presumption of death. However, it is

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not infrequent that facts are required from records of other types than vital records. Such types of records are those made for social security, military purposes, insurance, payment of pensions, professional licenses, hospital care, and a host of others.

At times it is necessary to prove that one is in truth the person to whom the documents refer.

After death, it becomes especially difficult for relatives to assemble even the most important pages of the Book of Life of their dead. Individuals must furnish proof before title to property is transferred or the payment of legitimate claims is made. Missing persons may be alive or dead.

#### IMPORTANCE TO REGISTRARS OF VITAL RECORDS

No one has a greater stake in the Book of Life than the registrar.

At the present time, he has the first page of each volume. But, although he may also have other important pages under his custody, they are scattered on different shelves of his vault. Some may be in the offices of his fellow registrars.

The registrar's primary responsibility has always been—

1. To obtain completeness and accuracy of registration.
2. To preserve records.
3. To certify from records.
4. To produce statistics from them.

The possibility of satisfying his basic responsibilities could be greatly reinforced if the registrar would take on the additional responsibility of binding the Books of Life into volumes. It is not necessary for him actually and physically to assemble the records of a particular individual and bind them into a volume. For all practical purposes, the end result will be achieved if he creates a Life Records Index indicating *where* all the most important records of an individual are filed.

The accuracy of vital records would be enhanced because of inconsistencies that would show up. The completeness of vital records would be improved because subsequent documents would show that previous records which should have been filed had not been placed on file. Certification would become more secure from fraud. For instance, birth records of dead people could not be certified for fraudulent purposes. Massive certification jobs for government, which of necessity are so often done without charge, could be handled more efficiently and less expensively through a check-off system. Statistical information would become more meaningful because it would be linked to other types of data.

It is not too rash to predict that if the registrars of the country would undertake to prepare and keep up-to-date the Life Records Index on all the people of the country and do the job systematically and efficiently, they would find themselves and their offices to be the focal point of all records concerning people throughout the country. This would probably be accomplished in a surprisingly few years because the need for such a record linkage service is very great. It should be achieved at a relatively small total cost because the mechanism of the task is a very simple one, and, in performing this service, registrars would find that they were doing a particularly fine job in carrying out their primary responsibilities of registration and statistics.

#### IMPORTANCE TO HEALTH, WELFARE AND OTHER TYPES OF ORGANIZATIONS

Numerous national, state, and local official organizations rely heavily on knowing certain chapters in the Life Records Index of many persons. In order to carry out their assigned tasks, organizations must ask individuals to produce proof of who they are, where and when they were born, to whom they

are married, whether they served in the military forces, and a hundred other questions. Throughout all of this, the organization official must keep in mind the possibility of fraud. "Is this person really John Doe?" "Is his record as recorded true or false?"

After an individual has died, it is particularly difficult for the organization official to tap the facts concerning the records of the deceased. Frequently he does not know whether or not the individual is dead. For example, certain insurance companies systematically send to all fifty-three registration areas in the United States the names of persons with whom they have lost contact and who are presumed to be dead. The companies want to pay insurance benefits if they are due. In addition, they want to clear their books.

To know the fact-of-death whenever or wherever it occurs is of importance to every organization, official or private, that maintains an "active" file on large numbers of individuals. For example, it is costing the United States Government millions of dollars per year to maintain the millions of records of dead people in their active files. Every search for a particular record is complicated and made more costly because the files contain "dead" records. Space costs are reflected in higher rentals and upkeep.

Another reason organizations have an interest in record linkage is that it will help them obtain more meaningful quantitative knowledge about their own programs. Most organizations dealing with individuals produce some type of administrative statistics of the individuals served by them. It would greatly enhance the significance of such statistics if they could be linked to other facts about the same individuals, such as, "What sort of jobs do they hold?" "How many children do they have?" "What sort of illness do they suffer from?" "What kind of social

environment do they live in?" In particular health and welfare organizations would find that this type of linked statistical analysis would open new vistas of knowledge to them.

#### BINDING THE BOOKS OF LIFE INTO A SINGLE VOLUME

There are many ways of binding the Books of Life into volumes. Most of the registration systems in Europe accomplish this end by a central national file. Such systems are reinforced by constant referral to this file through the exercise of police powers. In general, all such systems will find disfavor in the United States.

Several years ago Canada was forced, by the passage of legislation on family allowances, to find an economical and efficient way to link all the vital records of an individual. Annual payments of 250 million dollars required up-to-the-minute and certain proof of the ages and birth order of all children under 16 years of age. It was decided that all customary certification methods were too costly, too slow, and too open to fraud. The system as worked out in Canada has proved to be simple and relatively inexpensive. *It has worked from the start.* It has kept vital records in their proper place, i.e., under the control of public health and statistical agencies. In the near future, it will probably be expanded to include older ages.

The elements of the system are:

1. The Dominion Bureau of Statistics obtains microfilm copies of all vital records: births, deaths, marriages, divorces, adoptions, immigrations and emigrations.

2. It then produces a uniform name index punch card for all such records. The index cards so produced are decentralized by duplicating the cards or by sending printed index lists to the province of birth, regardless of what province a particular record is filed in. In this manner a printed, ledger-type Life Records Index is created for each province from the birth certificate. Each punch card

is presented in this Index as a single printed line of type.

3. Massive certification jobs for governmental purposes are done by check-off against this index in the province of birth.

4. A statistical card is punched by the Dominion Bureau of Statistics at the same time as the name index card is punched.

5. The Dominion Bureau of Statistics codes and tabulates all vital statistics, and publishes the national data. Detailed provincial statistics are turned over to the province for their publication and exploitation.

6. The control of this joint federal-provincial vital records-vital statistics system is under a *Council of Vital Statistics* made up of the provincial registrars, the Dominion Statistician, and the Directors of Vital Statistics and Census, Divisions of the Dominion Bureau of Statistics.

7. The use of a birth card is being actively promoted throughout all Canada so that the person's identity number (birth card number) can be absorbed in all official records and thus simplify the posting of facts to the Life Records Index.

Canada has gone a long way toward producing a solution of this problem for persons under twenty years of age because of the legislation on family allowances. In addition to the great advance which Canada has made in linking the records of families having children under this age, it is now faced by problems involved in creating a nation-wide prompt clearance of the fact of death.

#### DEATH CLEARANCE

While this is but a single step in the whole process of obtaining record linkage, it is a most important step. There is so much demand for death clearance that, whatever it cost, the earnings should pay the costs of undertaking the task on a nation-wide uniform basis.

The principal market for this national death clearance system comes from those insurance companies and social organizations and institutions, both governmental and private, which either pay out money upon the death of the individual or which have obligations

that are cancelled at the death of the individual. In the aggregate, the market for this type of service is enormous. It is a multiple market, for the fact of death on one individual is needed by various organizations. Ultimately, an average of five to ten purchase orders for such information might be posted against the Life Records Index of each individual for a report of the fact of death whenever the death occurs. Since the deaths of older persons would involve a high percentage of unregistered births, it would probably be economical to handle such records on the basis of a systematic search against state death indexes.

The generalization of a record linkage system to all persons in the country depends primarily on three things:

1. *An efficient Life Records Index to the important records of an individual*—The Life Records Index should be located in the state of birth and must lead to the individual's vital records wherever they might have been placed on file. This cross-index should be arranged in birth certificate number order rather than in an alphabetical name order.

2. *An efficient and prompt inter-state exchange of essential facts* which need to be posted to the Life Records Index—This involves as a minimum the exchange of facts identifying and locating the certificates of marriage, divorce, annulment, adoption, change of name, legitimation and death, whenever they are placed on file in a state other than the state of birth.

3. *The promotion of the widespread use of the Birth Card*—This is the key to efficient record linkage. If the governmental organizations, both federal and state, absorb the birth certificate number into their own records and require that the individual produce it before they obtain services—*Services Which They Need*—people are going to carry their birth cards with them wherever they may go. If the birth certificate number becomes a part of every type of record it will greatly simplify posting to the Life Records Index. The establishment of a nation-wide system of record linkage for all persons in the country will become an invaluable adjunct to the administration of health and welfare organizations and at the same time produce coordinated statistical knowledge of great value. With the birth certificate number as

the binding of the Book of Life and the Birth Card as a device to facilitate the posting to the Life Records Index, all the records on an individual will eventually become linked together. Ultimately, the birth cer-

tificate number should be requested as an item in the national decennial census. In this way the wealth of information produced by the census will be linked to the vital records listed in the Life Records Index.

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# Persistence of Hypersensitivity to Old Tuberculin following Primary Tuberculosis in Childhood\*

A Long Term Study

JANET B. HARDY, M.D.

*Department of Pediatrics, Johns Hopkins University School of Medicine,  
and the Harriet Lane Home, Johns Hopkins Hospital, Baltimore, Md.*

DURING the past twenty years a steadily increasing number of roentgenograms of the chest of apparently healthy individuals have been taken each year as part of tuberculosis and other surveys. Calcified lesions in the lungs have been noted in varying proportions of these films depending to some extent on the geographic location in which the study was done; Long and Stearns,<sup>18</sup> showed the incidence to vary from 6 per cent in Oregon to 28 per cent in Kentucky. Various authors have reported on, and speculated about, the etiology of such calcified lesions, especially when seen in the chest films of individuals reacting negatively to relatively large doses of tuberculin.

One group of workers<sup>3, 4, 9, 16, 22, 25, 30</sup> have stoutly maintained that in spite of negative tuberculin tests, such lesions may result from a tuberculosis infection, either a primary tuberculosis of the bronchopneumonic type or healed military tuberculosis. The proponents of this view believe that individuals demonstrating such calcified lesions have had a primary tuberculous infection which either—

a. has been completely healed, allowing a loss of hypersensitivity to tuberculin, or

b. was not at any time accompanied by any obvious degree of hypersensitivity,<sup>21</sup> or  
c. has been followed by repeated exposures of minimal degree over long periods,<sup>9</sup> resulting in desensitization.

It has been suggested that if large enough doses of tuberculin, 10 mg. or more, are given, positive reactions may be obtained. We have found such large doses of tuberculin to be unreliable as the percentage of false positive (nonspecific) reactions increases tremendously as the dose is increased above 1.0 mg. Dahlstrom<sup>11</sup> and Lumsden<sup>10</sup> have maintained that in view of the relatively large percentage of calcified lesions found in the chest of tuberculin-negative individuals, the tuberculin test is of little value in epidemiological studies of tuberculosis.

Other workers have speculated about other etiological factors.<sup>17, 28, 31</sup> Many fungus infections have been suggested; Aronson<sup>1</sup> and Cox<sup>7</sup> have shown that coccidioidomycosis will produce such lesions; Sayers<sup>28</sup> on the basis of a study in Oklahoma suggested the *Aspergillus niger*. Christie and Peterson,<sup>5, 6</sup> have been the first to show relationship with the histoplasma. They demonstrated the relationship between positive histoplasmin skin tests and a case of proven histoplasmosis, and have done further extensive studies in Tennessee, reported

\* This study was aided in part by a grant from the Commonwealth Fund, by the U. S. Public Health Service and the Maryland Tuberculosis Association.

at the recent (1946) Pediatric Society Meeting at Skytop, Pa., which strongly suggest that this possibility is true. Palmer<sup>26</sup> in a country-wide study on student nurses has also demonstrated significant correlation between the calcified lesions as seen on chest x-ray and positive histoplasmin tests. Emmons has demonstrated cross-sensitivity between histoplasma and other fungi, notably blastomyces.

This study, done with the support of Dr. Carroll E. Palmer and the U. S. Public Health Service, was undertaken in an effort to attack this problem from a different angle. Can these findings be explained on the basis of healed primary tuberculosis? If a group of young children is observed during a primary tuberculous infection and followed periodically into young adult life, does their tuberculin sensitivity persist and what happens to the tuberculous lesions? To state the matter even more simply, can one demonstrate loss of sensitivity to tuberculin following healing of primary tuberculous lesions?

The Harriet Lane Home Tuberculosis Clinic was well equipped to make such a study. This clinic was started in 1928 for the care and study of young children with tuberculosis. About 850 children under 2 years of age at the time of entry have been registered in the

clinic. These children have been carefully followed with serial x-rays, periodical physical examinations, and tuberculin tests. Their environments have been closely checked in order to determine the sources of tuberculosis to which they have been exposed, and to gather information as to their diet and general living conditions. Many of these children have not yet reached 15 years of age, and hence were not eligible for inclusion in this study, but as in each instance the whole family group was investigated when the patient was registered and has been periodically checked since, an additional number of suitable individuals was available among the older siblings of registered patients.

As it was not possible to restudy many of the individuals tentatively chosen from the family groups (some were dead, others in the armed services, or had left Baltimore), in order to supplement the number available for the study some additional persons were selected at random from the Diagnostic files of the Harriet Lane Home. These had been patients on the wards or had been followed in the Health Clinic of the Harriet Lane Home where routine contact examinations for tuberculosis are performed. Of a total of 451 available individuals, 333 returned for examination (see Table 1). Of these, 312

TABLE 1

	Positive X-Ray Group					X-Ray Negative Group					Grand Total
	Family Study		Diagnostic		Total	Family Study		Diagnostic		Total	
	W	B	W	B		W	B	W	B		
Number of Patients											
Suitable for inclusion	159	199	46	79	483	116	201	1	2	320	803
Examined and Completed	81	122	10	17	230	37	43	1	1	82	312
Incomplete	1	0	0	1	2	0	0	0	1	1	3
Discarded	1	9	2	1	13	2	3	0	0	5	18
Not Examined	76	68	34	60	238	77	155	0	0	232	470
In U. S. Service	31	15	3	10	64	22	35	0	0	57	121
Died from											
Tuberculosis	0	2	1	8	11	0	4	0	0	4	15
Other Causes	2	0	1	3	6	1	2	0	0	3	9
Out of State	11	18	7	8	44	11	20	0	0	31	75
Other Causes	0	4	4	3	11	1	13	0	0	14	25
Not Located	2	5	6	14	27	1	15	0	0	16	43
Uncoöperative	28	24	6	13	71	8	39	0	0	47	118
Not Contacted	2	0	1	1	4	33	27	0	0	60	64

FIGURE 1—Present age distribution of 312 individuals included in the study

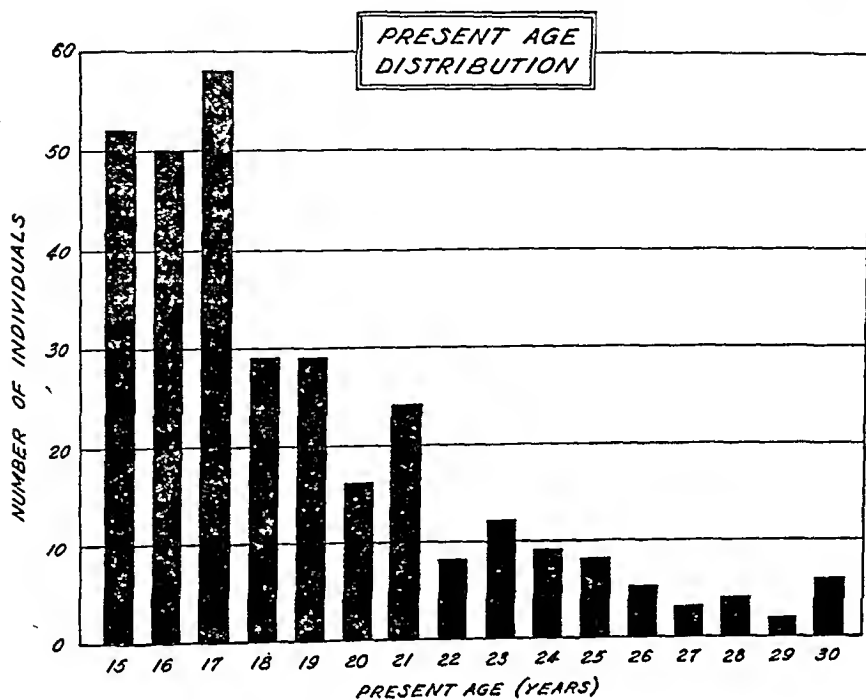


FIGURE 2—Distribution by age of the individuals in this study when first observed to be infected with tuberculosis

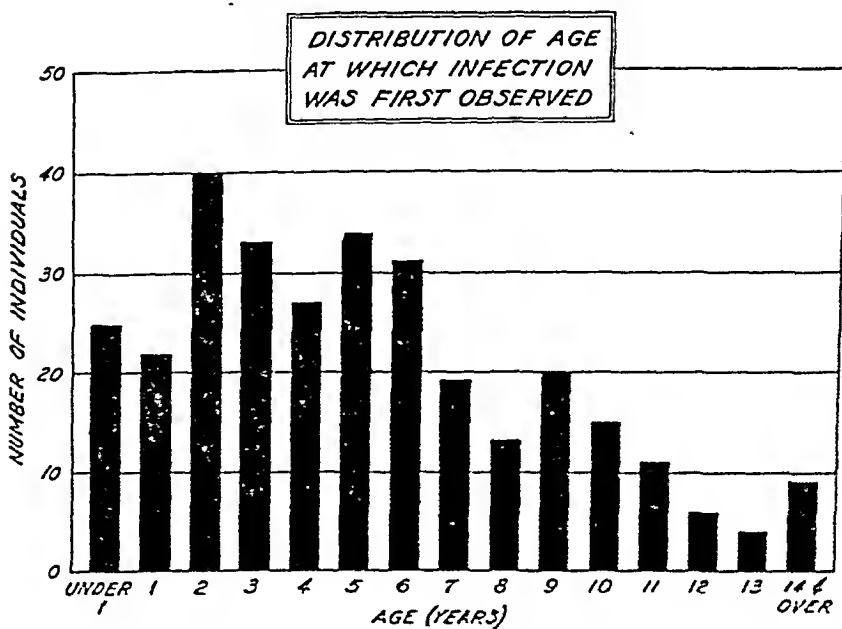




TABLE 2  
*History of Exposure to Tuberculosis*

Group	Total	Sputum Pos		Sputum Neg.		Sputum Not Recorded (all had tbc)		No Exposure Known	
		No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
I Pulmonary Tuberculosis	59	23	39	1	1.7	18	30.5	17	28.8
II Mediastinal Tuberculosis	171	98	57	8	4.6	47	26	18	10.5
III Positive Tuberculin Only	82	51	62	5	6.2	21	25	5	6.0
Total	312	172	55	14	4.4	86	27	40	12.5

were finally included in the study. The others were excluded because of inadequate follow-up, poor x-ray films, or lack of coöperation.

The group chosen for study consisted of 312 individuals born between 1912 and 1930, having had a primary tuberculous infection in childhood and followed at least 7 years. There were 193 Negroes and 129 whites. Two hundred and two were females and 110 were males. The present age distribution is shown in Figure 1. The age at which they were first observed to be infected is shown in Figure 2. These persons were drawn from the urban population served by the outpatient department of the Johns Hopkins Hospital. They all had at least one positive tuberculin test—87 per cent of them had had contact with a tuberculous individual, 55 per cent with known sputum positive disease (see Table 2). The reasons for

their original hospital visit are summarized in Table 3. Only 21 per cent presented signs or symptoms of illness; the others were seen as contacts of known cases of tuberculosis or had positive tuberculin reactions found on routine examination for some other reason than suspected tuberculosis.

Return to the hospital was secured through the efforts of the clinic's two social workers and a specially appointed public health worker under the direction of the senior social worker, Georgie O. Walker. In order to secure return, many home visits were necessary. The skill and enthusiasm of these workers was largely responsible for the success of the study.

All of the individuals in the study were examined and had x-ray films of the chest at the time of their original visit to the hospital. The majority have been followed routinely at ap-

TABLE 3  
*Reason for Examination*

Group	Tuberculosis Contact		Illness		Total	
	No.	Per cent	No.	Per cent	No.	Per cent
I Pulmonary Tuberculosis	22	37	37	62	59	100
II Mediastinal Tuberculosis	145	78	26	15	171	100
III Positive Tuberculin Only	77	93	5	6.2	82	100
Total	244	78	68	21	312	100

proximately yearly intervals, at least during childhood. All had serial x-ray examinations, some series containing more than fifty films. All had positive tuberculin tests. At the time these individuals were seen as children, 0.1 mg. of old tuberculin was the routine test dose used except in the presence of obvious tuberculosis when 0.01 or less was used. Negative reactors were given 1.0 mg. or more, but positive reactors were not at that time routinely given smaller doses in order to determine their level of hypersensitivity.

In this clinic old tuberculin (supplied by the Gilliland Laboratories) given intradermally, in 0.1 ml. doses of the standard dilutions (1.0, 0.1, 0.01 and 0.001 mg.) has been used throughout the years. The tests are read routinely at 48 hours, occasionally later, up to 72 hours. In order for a test to be considered positive it must show both edema and erythema at least 1 cm. in diameter; reactions of less than this have been considered negative. Control tests have been done only with 0.1 and 1.0 mg. doses unless difficulty in interpretation of smaller test doses has arisen. We have seldom seen false positive reactions to doses of less than 1.0 mg. of tuberculin.

When the individuals chosen for the study reported for examination, they were questioned as to recent tuberculous episodes in themselves or their immediate environment. Only five individuals were known to have had contact with tuberculous individuals within the past five years. They were then examined roentgenologically with a standard postero-anterior 14x17 film taken at a distance of 6 feet, and a right buckey film of the mediastinum as this was felt to be the most satisfactory method of demonstrating retrosternal calcium. They were then given intradermal tests with 0.001 and 0.01 mg. of tuberculin unless they were known to be highly sensitive when only 0.001

mg. was given. The tests were read at 48 hours and if negative, 0.1 and 1.0 mg. were injected intradermally which were again read in 48 hours. It was not felt practical to continue giving still larger doses to the negative reactors. Control tests were given with the 1.0 mg. doses and no false positive reactions were encountered. The tests were all administered by the author and were read by the author or by the senior social worker who has had years of experience in this matter. The x-ray films were read by the author with valuable assistance from Dr. John W. Pierson, Head of the X-ray Department, The Johns Hopkins Hospital, and of Dr. Miriam Brailey, Bureau of Tuberculosis, Baltimore. Calcium deposits were not considered present unless the x-ray evidence for their presence was definite, and unless they were visible on at least two successive films of a series. Equivocal shadows were considered negative and the rounded dense shadows at the lung roots cast by large blood vessels were not considered to represent calcified bodies.

The 312 individuals studied were classified into three groups depending upon the x-ray examination of the chest.

*Group I* consisted of 59 individuals having primary pulmonary tuberculosis and followed for an average of 14.6 years. (The maximum period of follow-up was 20 years in three individuals and the minimum 10 years in four individuals.)

*Group II* consisted of 171 individuals having primary mediastinal tuberculosis, and followed an average of 12.6 years. (Twenty-two followed 7-10 years, 15 were followed 16 years or longer.)

*Group III* consisted of 82 individuals having no specific evidence of tuberculous infection on roentgen examination of the chest, followed an average of 12.6 years. (Twelve followed 7-10 years, 7 followed 16 years or longer.)

## RESULTS

*I. Roentgen Ray Findings* (to be published in more detail elsewhere).

Group I: *Primary Pulmonary Tuberculosis*—This group consisted of 59 individuals who, when they first came under observation, had active tuberculous lesions (in two instances there was evidence that the process had already begun to heal). The criteria for inclusion in this group demanded that the roentgen examination of the chest showed—

a. Definite parenchymal infiltration extending beyond the mediastinal nodes and exclusive of primary foci.

b. That these infiltrations were accompanied by enlargement of the mediastinal nodes as seen at some period in the course of the disease.

c. That these infiltrations were not associated with other acute diseases.

These individuals for the most part had lesions considered by this clinic characteristic of primary tuberculous pneumonia. As healing took place calcium deposits became evident by x-ray in 45 instances (76.3 per cent). In the majority of cases this consisted in calcification of the original primary complex; in many the calcium deposits were very extensive. In the other 14 (23.7 per cent) individuals in this group, the tuberculous process healed without calcification becoming visible by x-ray.

In this group were included two individuals who had had the adult, or reinfection type of tuberculosis as a continuation of a severe primary lesion. No evidence of reinfection tuberculosis was found in any other individuals in this group during the study.

Group II: *Primary Mediastinal Tuberculosis*—This group consisted of 171 individuals, 146 of whom had active tuberculosis and 25 of whom had healed lesions when they first came under observation in the clinic. The roentgenographic criteria for inclusion in this group demanded—

a. Definite bulging of the mediastinal lymph nodes, or

b. Definite calcification as seen on serial x-rays.

c. That the process be limited to the lymph nodes and to the primary focus (or foci).

d. That nonspecific root infiltration or fibrosis be excluded.

Healing was accompanied by calcification as seen on x-ray in 155 of the 171 individuals in this group.

In this group no individual was known to have had the adult or reinfection type of tuberculosis prior to this study. However, one instance of adult disease was found during the present survey. This was a minimal, inactive apical lesion found in a colored girl, aged 19 years, who had had only a mild primary lesion which had healed and become calcified many years previously.

Group III—This was the group into which individuals having a positive tuberculin test but no specific roentgenological evidence of tuberculosis were put. There were 82 individuals in the group, of whom 31 had chest films all of which were thought to be completely normal. The other 51 had at some time during the early part of their period of observation nonspecific infiltration or fibrosis at one or both lung roots. In 7 instances these had been diagnosed as mediastinal tuberculosis, but the changes did not appear sufficiently characteristic for inclusion of these individuals in Group II. No individuals in this group developed evidence of re-infection tuberculosis.

*II. Tuberculin Tests*

Group I: *Primary Pulmonary Tuberculosis*—This group consisted of individuals all having severe tuberculous lesions. Most of them, had they all been tested to doses of tuberculin of less than 0.1 mg., would undoubtedly have been markedly hypersensitive during the active stages of their disease. (Of the 24 individuals tested then with 0.01 mg. or less, 22 gave positive reac-

tions.) When tested during the study with graded doses of tuberculin, it was found that they were still markedly hypersensitive (see Table 4). About 90 per cent of them were positive to 0.01 mg. or less. The remaining individuals with one exception, were positive to 0.1 mg. The one remaining individual gave an equivocal reaction to a whole milligram. This is a white girl, aged 19 years, who had a severe primary lesion and who still had massive areas of calcification in the mediastinum. She gave a positive reaction to 0.1 mg. but did not react to 0.01 mg. during the active stage of her infection. There was no individual in this group who became completely anergic to 1 mg. of tuberculin.

seen on chest x-ray, and of the 4 individuals who had become anergic to 1 mg. of tuberculin, 2 had calcified lesions seen on x-ray—the other 2 did not.

*Group III*—This group consisted of individuals who had no definite tuberculous lesions in their chest x-ray. They had no other tuberculous lesions which could be identified, with the exception of 3 individuals who developed phlyctenular-kerato-conjunctivitis, and one who subsequently developed an area of intracranial calcification. The individuals in this group (see Table 4) showed a less marked degree of hypersensitivity to tuberculin and a somewhat larger percentage (6 per cent) who became anergic.

TABLE 4

*Group I: Primary Pulmonary Tuberculosis  
Present Tuberculin Sensitivity*

Group	Total No. of Patients	Positive Reaction to								Negative to 1.0 Mg.	
		0.001 Mg.		0.01 Mg.		0.1 Mg.		1.0 Mg.		No.	%
		No.	%	No.	%	No.	%	No.	%		
I Primary Pulm. Tbc.	59	32	54.2	21	35.6	5	8.5	1	1.7	0	0
II Primary Med. Tbc.	171	58	33.9	94	55.0	11	6.4	4	2.3	4	2.3
III No X-ray evidence of Tbc.	82	16	19.5	51	62.2	7	8.5	3	3.7	5	6.1

*Group II*—This group included individuals who had definite x-ray evidence of mediastinal tuberculosis. In some cases the infection was quite severe, in others relatively mild, but in no instance were the lesions as severe as those encountered in the previous group. The greater proportion of these individuals were still markedly hypersensitive to tuberculin. However, there was a slight tendency toward loss of sensitivity as 2 per cent of them became completely anergic to 1 mg. of tuberculin (see Table 4). Of the 8 individuals who were sensitive only to 0.1 mg. or more of tuberculin, all had at some time calcified lesions seen on chest x-ray. Of the 4 individuals who were positive only to 1 mg. or more of tuberculin, 3 had calcified lesions

*III. Extrapulmonary Tuberculosis* (to be published in greater detail elsewhere).

As was to be expected, the highest instances of extrapulmonary tuberculosis were to be found in Group I, among those having severe primary lesions. Thirty-five (59.3 per cent) of the 59 individuals in this group had extrapulmonary manifestations of tuberculosis. Many of these individuals had more than one such complication, there being in the whole group a total of 67 such complications among the 35 individuals involved (see Table 5). In Group II, only 23 (13.4 per cent) of 171 individuals had extrapulmonary manifestations of tuberculosis. Most of these individuals had only one such manifestation, there being 29 tuber-

TABLE 5  
*Manifestations of Extrapulmonary Tuberculosis*

Group	No. Patients in Group	Patients with Extra- pulmonary Tuberculosis		Total Number Manifestations
		Number	Per cent	
I Primary Pulmonary Tuberculosis	59	35	59.3	67
II Mediastinal Tuberculosis	171	23	13.4	29
III Positive Tuberculin Only	82	3	3.6	4

culous complications among the group of 23 persons. In Group III, the instances of extrapulmonary tuberculosis were extremely low. Among the 82 individuals in this group, 3 had phlyctenular-kerato-conjunctivitis, and 1 of the 3 was found subsequently to have developed an area of intra-cranial calcification.

#### DISCUSSION

At first glance the most striking finding of this study is perhaps the low incidence of the adult or reinfection type of tuberculosis (one instance among 312 individuals). When one considers that adult tuberculosis does not really take its toll before the third decade and that only 102 of the 312 individuals studied were 20 years of age or over, this finding is not remarkable.

The study demonstrates that tuberculin sensitivity in individuals (at least those living in Baltimore) experiencing a primary tuberculous infection during childhood has been remarkably persistent during the period of study. Two explanations for this persistence of hypersensitivity offer themselves. First, that in an urban community such as Baltimore, there is considerable overcrowding and ample opportunity for repeated minimal infections which suffice to keep the hypersensitivity at a high level; or, second, hypersensitivity of more than mild degree once developed is relatively permanent. If the first explanation is valid, then the individuals in all three groups studied should have behaved in the same fashion, but this has not been the case. The individuals in Group I, followed an

average of two years longer than those in the other two groups, have shown practically no tendency toward loss of hypersensitivity; those in Group II have shown a less marked degree of hypersensitivity and 2 per cent have become anergic to 1 mg., while those in Group III have shown still less marked sensitivity and 6 per cent have become anergic to 1 mg. of tuberculin.

Furthermore, only 4 of the patients studied have had any known exposure to tuberculosis during the past five years. When one compares the rate of positive tuberculin tests among the groups studied (90 per cent), with the rate in the general population in similar age groups in Baltimore, as exemplified by tests done by Dr. Miriam Brailey in a colored high school in a district where the tuberculosis rate is high, where the average age of the students compared well with our age group, 42 per cent were found to be positive, and with tests done by the Public Health Service on student nurses in Baltimore during their first six months in training where 15 per cent were found to be positive. On this basis one would be justified in assuming that if subclinical infections with tubercle bacilli were an important factor in persistent hypersensitivity to tuberculin, then surely a large number of individuals in this study would have become negative.

The finding of persistence of the tuberculin sensitivity in the great majority of instances over a long period of years following a primary tuberculous infection strongly suggests that while tuberculosis may be the etiological factor in calcified pulmonary lesions in in-

dividuals insensitive to intradermal tuberculin testing, this is a very infrequent occurrence and that some other explanation, possibly histoplasmosis,<sup>5, 6, 26</sup> should be considered more probable.

#### SUMMARY AND CONCLUSION

1. Three hundred and twelve individuals having a primary tuberculous infection during childhood and followed into young adult life have been studied with regard to persistence of tuberculin sensitivity.

2. Of the 59 individuals who had the more severe tuberculous lesions, 89.9 per cent still showed marked hypersensitivity an average of 14.6 years after their primary infection was first observed. None was anergic to 1 mg. of tuberculin.

3. The 171 individuals who had mediastinal tuberculosis showed for the most part a slightly less marked degree of hypersensitivity, 2 per cent had become anergic to 1 mg. of tuberculin.

4. The 82 individuals having positive tuberculin tests but no specific x-ray evidence of tuberculosis, were found to be for the most part somewhat less hypersensitive to tuberculin than the other two groups, 6 per cent had become anergic to 1 mg. of tuberculin.

5. In only one of the 312 individuals studied was reinfection tuberculosis found to be present years after the healing of the primary infection.

6. Tuberculosis may be the etiological factor in calcified pulmonary lesions in individuals insensitive to intradermal testing with 1.0 mg. of tuberculin, but this occurred infrequently in this study (twice among 230 individuals having definite x-ray evidence of tuberculosis).

#### REFERENCES

- 1 Aronson, J O, Saylor, R M, and Parr, E I Relationship of *Coccidioides immitis* to Calcified Pulmonary Nodules *Arch Path*, 34 31, 1942.
- 2 Austrian, C R, and Brown, W. H. Miliary Diseases of Lungs *Am. Rev Tuberc*, 45:751-755 (June), 1942
- 3 Baer, R W. Healed Miliary Tuberculosis *Am J Dis Child*, 27 110-112 (Feb), 1924
- 4 Blaine, E S. Roentgenological Evidence of Apparently Healed Miliary Tuberculosis of Lungs *Am J Roentgenol*, 11 233-237 (Mar), 1924
- 5 Christie, A, and Peterson, J C. Personal Communication
- 6 Christie, A, and Peterson, J C. Pulmonary Calcification in Negative Reactors of Tuberculin *A J P H*, 35 1131-1147 (Nov), 1945
- 7 Cox, A J, and Smith, C E. Arrested Pulmonary Coccidial Granuloma *Arch Path*, 27:717, 1939
- 8 Crabtree, J A, Hickerson, W. D, and Hickerson, V P. Tuberculosis Studies in Tennessee; Community Study of Prevalence of Tuberculosis in Negro *Am Rev Tuberc* (Supp.), 28 1-31 (Dec), 1933
- 9 Crumm, P D, and Short, D M. Tuberculin Anergy in Cases with Pulmonary Calcifications *Am Rev Tuberc*, 39 64-69, 1939
- 10 Crumm, P D, Potts, W L, and Hudson, G S. Tuberculin Tests and Roentgenograms as Correlation on 1,000 Adults—Evansville, Indiana. *Am Rev Tuberc*, 42 203, 1940
- 11 Dahlstrom, A W. Instability of Tuberculin Reactions, Observations on Dispensary Patients, with Special Reference to Existence of Demonstrable Tuberculous Lesions and Degree of Exposure to Tubercle Bacilli *Am. Rev Tuberc*, 42:471-487 (Oct), 1940
- 12 Dillon, A, and Gass, R S, et al. Results of High School Tuberculosis Program in Tennessee *J Tennessee M. A*, 38:97 (Apr), 1945
- 13 Edwards, L B, and Hardy, J B. The Relation of the Degree of Sensitivity to Tuberculin to the Persistence of Sensitivity and to Prognosis in Young Children *Bull. Johns Hopkins Hosp*, Jan, 1946
- 14 Gass, R S, et al. Tuberculosis Studies in Tennessee; Roentgenological Evidence of Tuberculous Infection in Relation to Tuberculin Sensitivity in School Children *Am. Rev Tuberc*, 38 441-447 (Oct), 1938.
- 15 Gass, R S, et al. Pulmonary Calcification and Tuberculin Sensitivity among School Children in Williamson County, Tennessee *Am Rev Tuberc*, 47 379-387, 1943.
- 16 Greever, E F. Miliary Calcification of the Lung *Am J. Roentgenol*, 49 777-782 (June), 1943
- 17 King, D S. Non tuberculous Miliary Lesions of Lung *Internat Clin*, 1:115-118 (Mar), 1938
- 18 Long, E R, and Stearns, W. H. Physical Examination at Induction; Standards with Respect to Tuberculosis and Their Application as Illustrated by Review of 53,400 X-ray Films of Men in Army of United States *Radiology*, 41:144-150 (Aug), 1943.
- 19 Lumsden, L L, Dearing, W P, and Brown, R A. Questionable Value of Skin Testing as a Means of Establishing an Epidemiological Index for Tuberculous Infections *A J P H*, 29:25 (Jan), 1939
- 20 Lumsden, L L, and Dearing, W P. Epidemiological Studies in Tuberculosis *A J P H*, 30 219 (Mar), 1940
- 21 Mavoral, A. Multiple Miliary Calcifications in Lung *Radiology*, 36 367-371 (Mar), 1941
- 22 Middleton, W S. Healed Miliary Tuberculosis of Lung *Am J. Roentgenol*, 14 215-221 (Sept), 1925
- 23 Nelson, W, Mitchell, A G, and Brown, E. The Intracutaneous Tuberculin Test Associated with Calcified Intrathoracic Lesions *Am Rev Tuberc*, 37 311, 1937.

24. Olson, B. J., Wright, W. H., and Nolan, M. O. Epidemiological Study of Calcified Pulmonary Lesions in an Ohio County. *Pub. Health Rep.*, 56: 2105-2126 (Oct. 31), 1941.

25. Opie, E. L. The Diagnosis of Healed Miliary Tuberculosis (Editorial). *Am. J. Roentgenol.*, 11: 289-291, 1924.

26. Palmer, C. E. Non-tuberculous Pulmonary Calcification and Histoplasmin Sensitivity. *Pub. Health Rep.*, 60:19 (May 11), 1945.

27. Puffer, Ruth. Personal Communication.

28. Sayers, R. R., and Meriwether, F. V. Miliary Lung Diseases Due to Unknown Cause. *Am. J. Roentgenol.*, 27:3 (Mar.), 1932.

29. Sutherland, C. G. Miliary Calcification in Lung. *M. Clin. North America*, 8:1273-1286 (Jan.), 1925.

30. Ward, H. H. Healed Miliary Tuberculosis: 5 Cases. *M. Bull. Vet. Admin.*, 13:88-89 (July), 1936.

31. Wher, W. Zahlreiche Calcificationen der Lungen. *Frankfurt Ztschr. f. Path.*, 51:182-189. 1938.

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## Dallas Health Museum

Conceived and fostered by the Dallas Academy of Medicine, the Dallas Health Museum was opened on October 5 in a large stone structure which formerly housed the exhibit of Texas natural resources on the State Fairgrounds, Dallas. At the time of the opening the State Fair was in full swing. Dr. Oscar M. Marchman, Sr., president of the Academy, stated that the opening was timed to give visitors from all parts of the state "a sample of what can be done to make health visible for the benefit of large groups of people." Bruno Gebhard, M.D., Director of America's first health museum, in Cleveland, was the principal speaker at the opening. The Dallas Health Museum is a project of the Academy. It is incorporated and financed separately from the Academy.

Museum officers are R. L. Thomas, President, Charles R. Moore, Vice President, Marguerite L. Hays, Vice President, Dr. Milford O. Rouse, Secretary, and W. Ray Spears, Treasurer.

Dr. Rouse was a principal activating influence in forming both the Academy and the Health Museum, and Mr. Spears, of the Medical Service Society made up of druggists' representatives, is secretary-treasurer of the Academy in addition to his duties with the Museum.

The stated aims of the Dallas Health Museum are to furnish accurate and dependable facts and information on health in line with practices approved by doctors, dentists, pharmacists, nurses, public health officers, hospital personnel, and other scientific sources.

Permanent exhibits at present include duplicates of the Dickinson-Belskie Collection from Cleveland Health Museum and duplicates of several other Cleveland exhibits. Other exhibits are on loan from Cleveland Health Museum. The American Medical Association has loaned many of its exhibits. The movie hall was equipped by the Dallas County Pharmacist's Association for showing of health films. The Mayo Foundation has also added interesting exhibits.

# Rodent Control with 1080, ANTU, and Other War-Developed Toxic Agents

JUSTUS C. WARD

*Pharmacologist, Wildlife Research Laboratory, U. S. Fish and Wildlife Service,  
Department of the Interior, Denver, Colo.*

RATS have been recognized as disease carriers from an early day, and the primary rôle they play in the spread of bubonic plague, typhus fever, and many less important illnesses is well known. Public health officials and economic rodent control agencies have emphasized the importance of rat control for many years. It has been recognized that construction of rat-proof buildings and the rigid enforcement of adequate sanitation regulations are fundamentals, which must be observed to combat rodent pests effectively. As a supplement to these procedures, however, the reduction of excess rat populations is essential. It is in this phase of rodent control that most spectacular advances have been made during the past few years.

The importance of reductional control was stressed by medical officers of the Armed Forces early in the war, when it became obvious that troops would invade portions of the world where rodent-borne diseases were known to exist. Research work to discover and test new poisons was intensified when early military action by the enemy cut off supplies of red squill, thallium, and strychnine. ANTU and Compound 1080 were two of the most important discoveries. "ANTU," or "Chemical 109," were the code designations of Alphanaphthylthiourea, which was the first of the newer agents to be found. ANTU was one of those fortuitous

scientific "accidents" caused by the astuteness of a competent observer whose vision enabled him to recognize the value of a chance observation. At the beginning of the ANTU story, Dr. Curt P. Richter of Johns Hopkins University was studying taste psychology in rats, and he noticed that when he used PTC, phenylthiocarbamide, his experimental rats usually died. As PTC had been used safely for several years in studying taste reactions in humans, Dr. Richter was impressed by its apparent toxicity to rats. Feeding trials showed that phenylthiocarbamide was refused by rats, so it became necessary to find a chemical relative which would still be toxic, but would be more palatable. When the potential value of the thiourea compounds was explained to the Committee on Medical Research of the Office of Scientific Research and Development, it was decided that funds should be provided to follow through on the idea. Coöperation was set up between Dr. Richter and the research specialists of E. I. du Pont de Nemours and Company. A large number of substituted thioureas was synthesized, until alphanaphthylthiocarbamide—or alphanaphthylthiourea, as it is called more commonly—was produced. This substance was found to have the same toxicity to rats as phenylthiocarbamide, and to be much more palatable.

Extensive field trials then were



needed to test the suitability of ANTU for the control of various rodent pests. Arrangements were made with Baltimore health officials, and an extensive rat reductional program was instituted in the city. Simultaneously, the assistance of the Fish and Wildlife Service was requested, and a supply of the new poison was forwarded to Denver. Samples were distributed to workers in various parts of the country. Early reports showed that ANTU was entirely ineffective against California ground squirrels, and was only about one-thirtieth as toxic to black or Alexandrine rats as it was to Norway rats. These observations led to studies which proved that ANTU is highly specific, since it affects Norway rats more readily than it does any other species of animal. It is also more effective against adult than young Norway rats. It causes development of tolerance, since rats which have survived sublethal doses of ANTU are able to withstand subsequent amounts which are many times the acute lethal quantities. In common with many other poisons, it has the characteristic of "educating" rats which have survived small doses, against eating baits containing ANTU again. Unfortunately, it will kill dogs and is toxic in varying degrees to most carnivorous species, while being less dangerous to the herbivorous ones.

When all of these characteristics are given due consideration, the conclusion is reached that ANTU has several idiosyncrasies which must be understood before the substance can be used to best advantage, but that it has promise of becoming a very useful material. It will kill adult Norway rats at 6-8 mg./kg., and accordingly may be used effectively at 1 per cent concentration in bait. ANTU, which is a light grey insoluble powder, may be employed either mixed with ground food; dusted over cut sections of fruits, vegetables, or meats; or mixed with talc and blown

into rat burrows or along rat runways. The poison is new, and there are many problems with regard to its adaptability, and to its methods of use, which remain unsolved. Dr. Richter and many of his coöperators are still studying them, however, so it is to be expected that many of these questions will be answered in the near future, and that the true value of ANTU will be demonstrated.

The discovery of Compound 1080 is an illustration of the advantages of wartime coöperation. Prior to the war, strychnine, thallium, red squill, zinc phosphide, arsenic compounds, barium carbonate, and cyanides were readily available, so the earlier search for new agents was of scientific rather than of practical importance. War changed all that, and when shortages of the more effective rodenticides appeared to be imminent, the Wildlife Research Laboratory of the Fish and Wildlife Service undertook a strenuous search for substitute poisons.

When invasion forces encountered rat-borne tsutsugamushi disease, the importance of this project was emphasized and the Office of Scientific Research and Development provided sufficient funds to accelerate this work. Close coöperation was set up with research units of chemical industry, certain army laboratories, and various committees of the OSRD. Several hundred compounds known to possess toxicity in themselves, or to contain molecular configurations suspected of being toxic, were obtained for tests. Finally, Division 9, National Defense Research Committee of the OSRD, sent 10 chemicals to the Fish and Wildlife Service laboratory at the Patuxent Refuge, where preliminary toxicities were being run. One of these ten was given the invoice number "1080."

Stomach tube tests showed that "1080" and one or two others of this batch of chemicals were highly toxic,

so they were forwarded to Denver for further examination. Compound 1080 was found to be the only one of the ten meeting all of the requirements, and, the first of the several hundred chemicals tested, to show evidence of becoming a satisfactory poison.

As the first reports reached the OSRD, it appeared that 1080 might be the new poison which had been sought by Service forces and public health agencies for fighting rodent-borne diseases. The need for haste in testing 1080 was obvious, and the OSRD set up a Rodent Control Subcommittee to expedite that program. To supplement the field testing being done by the staff of the Wildlife Research Laboratory of the U. S. Fish and Wildlife Service, whole-hearted coöperation was obtained of the U. S. Public Health Service, the Surgeon General's Office of the Army, the Bureau of Medicine and Surgery of the Navy, the U.S.A. Typhus Commission, the Chemical Warfare Service, the University of Chicago Toxicity Laboratory, the

British Commonwealth Scientific Office, the Texas State Department of Health, the Pan American Sanitary Bureau, and many others. Thus, it was possible to get world-wide studies with 1080 under way.

The results of all of this work have been most revealing. As a poison for the control of certain pests, Compound 1080 has no equal. It is highly effective against all species of rats; it is satisfactory for the control of mice; it gives phenomenal control of prairie dogs, California and other ground squirrels, and gives promise of being useful on other species on which it has not been tested. In short, 1080 is so generally and highly toxic that it is too dangerous for general distribution.

Whereas ANTU is reasonably safe for the inexperienced layman to use, 1080 has been proved to be a tool for only the most expert and careful specialist. To the pharmacologist familiar with strong poisons, the toxicity of 1080 is almost unbelievable. Table 1 illustrates that point.

TABLE 1  
*Toxicities of Sodium Fluoroacetate (1080)*

<i>Animal</i>	<i>Route of Administration</i>	<i>Approximate LD 50%</i>
Dog	IV *	0.1-0.2 mg./kg.
Coyote	IP Less than	0.2 mg./kg.
Rabbit	IV	0.3 "
Pig	IP	0.3 "
Cat	IP	0.3 "
Calif. ground squirrel	Fed	0.3 "
Black-tailed prairie dog	Fed	0.3 "
Guinea pig	Fed	0.3-0.4 mg./kg.
Field mouse	Fed Less than	0.5 mg./kg.
Bobcat	IP Less than	0.67 "
Goat	IM	0.7 "
Rat (black species)	ST	1.0 "
Rat (Norway)	ST	3.0- 4.0 mg./kg.
Monkey (Rhesus)	IV	5.0- 7.5 "
Monkey (Spider)	IV	10.0-12.0 "
Chicken (Rhode Island Red)	Fed	6.0- 7.0 "
Frog	SC	1000.0-2000.0 "
Horse (British data)	Not given	1.0 mg./kg.

\* Experiments at Edgewood Arsenal have indicated that the route of administration has a minor effect on the toxicity of 1080. Consequently, it was considered permissible to compare the results obtained by intravenous injection (IV); stomach tube (ST); intraperitoneal injection (IP); subcutaneous injection (SC); and intramuscular injection (IM); with those determined by feeding.

The comparative toxicities of 1080 to dogs, cats, and rats foreshadows one of the most serious disadvantages of this poison. Because of their greater sensitivity, dogs and cats are killed by eating sick or dead rodents killed by 1080. This means that pets must be removed from areas where this poison is exposed, and must be kept away until all bait and all carcasses have been picked up.

In fact, there is only one advantage appearing on the list of toxicities given above, and that is that primates are less susceptible to 1080 than are most of the lower animals. That makes it possible for us to assume that there is a relative degree of resistance in humans.

The high suceptibility of rodents makes it possible for a very small amount of the poison to be used in bait, and as a consequence, normal baits containing 1080 are not extraordinarily dangerous to humans. In Table 2, the strongest concentration of 1080 recommended in any standard formula is used.

This is the mixture of 1/2 oz. of 1080 in 1 gallon of water. Rat food baits use 1 gm. of 1080 per lb. (1 oz./28 lb.) and field rodent formulas use only 1 or 2 oz. per 100 lb. of grain. These baits would be less dangerous to man because of the weaker concentration of poison than would be true of the water mix.

It is of interest to compare the relative danger from baits containing several of the common poisons in the concentrations that these are commonly prepared.

In interpreting this table, one important factor must be considered. There is no known antidote for this new poison, and its rapid absorption makes the use of first aid measures effective for only a short time after the poison is swallowed. Much work has been done to find an effective treatment for 1080, and the following suggestions are offered by the Chemical Warfare Service.

TREATMENT IN CASES OF ACCIDENTAL POISONING WITH 1080

Treatment is limited to the use of emetics, and the poison must be eliminated within a few minutes if the absorption of dangerous quantities is to be prevented. Make the patient vomit at once by tickling the throat with the finger, or give 1/2 teaspoonful of powdered mustard in a cup of warm water. Give a dose of Epsom salts as a purge. Call a physician at once and give him the following information:

For the Physician—Compound 1080 affects the myocardium and the central nervous system. In primates the effect on the heart is the primary cause of death. Pulsus alternans appears first, followed by premature systoles and ventricular fibrillation. The central nervous system reaction is shown by epileptiform convulsions. Following treat-

TABLE 2  
Toxicities to Man of Rodent Bait Prepared with Common Poisons

Poison	Accepted Lethal Dose to Man mg./kg.		Concentration Used in Baits	Ounces of Bait Containing a Lethal Dose for a 150 lb. Man
Arsenous acid (As <sub>2</sub> O <sub>3</sub> )	1.5-15.0	3%	(1 part in 33 parts)	0.12-1.22 oz.
Strychnine	1.0	0.3%	(1 " " 320 " )	0.8 oz.
Sodium fluoroacetate (1080)	5.0	0.4%	(1 " " 256 " )	3.15 "
Thallium sulphate (Tl <sub>2</sub> SO <sub>4</sub> )	20.0	1.5%	(1 " " 65 " )	3.2 "
Zinc phosphide (Zn <sub>3</sub> P <sub>2</sub> )	40.0	2.0%	(1 " " 50 " )	4.9 "
Barium carbonate (BaCO <sub>3</sub> )	800.0	20.0%	(1 " " 5 " )	9.9 "
Alphanophyl thiourea (ANTU)	Unknown	5.0%	(1 " " 20 " )	Probably very large

ment to remove the poison, place the patient at complete rest. Control the CNS excitement by careful use of barbiturates having a moderate duration of action, such as sodium amytal. Little else can be done to arrest the cardiac symptoms.

This summary would be incomplete without reference to two chemicals discovered in Germany during the war. The first of these was *p*-dimethylamino-benzene diazosulfonic acid, sodium salt. This substance was moderately toxic and was reported to be rather effective in the control of rats in Germany. The other was 2-Chloro-4-dimethylamino-6-methylpyrimidine, called "Castrix"—obviously for convenience. This chemical was a great deal more toxic, and was said to be an excellent substitute for thallium. Adequate supplies of these materials have not been made available as yet to workers in the United States, but arrangements have been completed to obtain reasonable lots of both poisons for study. Enough work has been done, however, to justify the belief that neither will be superior to 1080 in efficiency, and that "Castrix," at least,

will also be highly dangerous. There is no expectation that either one will be a substitute for 1080, as far as efficiency is concerned, but there is a chance that both may be used more generally with less danger to pets and children.

The conclusion which must be reached from the review of the developments of the past few years is that new discoveries often come in groups. It is no longer fantastic to hope that toxic agents which will be effective only against the rodent pests may be found soon. It is much more logical now to look forward to a world in which man will be able to keep his communities free of rats, than it was before ANTU, 1080, and the other new control agents were discovered. A strong research program in rodent control will continue to be a definite adjunct to permanent improvement in the economic welfare and in the public health, and will be useful in proportion to the degree in which its discoveries are put to use by local and national agencies.

# Post-war Control of Flies and Mosquitoes on Public Health Programs

MARK D. HOLLIS AND HERMAN L. FELLTON

*Sanitary Engineer Director; and Sanitarian (R), U. S. Public Health Service,  
Atlanta, Ga.*

IT is doubtful if the causes and prevention of insect-borne diseases have ever been better understood or of greater general interest to people in this country, or in any other country, than they are at present. This probably results from the unprecedented publicity given especially to fly- and mosquito-borne diseases during the war years.

During their training periods millions of our young men and women in the armed forces received special instructions on personal protection against arthropod-borne diseases. Many of them encountered these diseases while serving in one or more of the many theaters of war. During the war period, the civilian population received information via the press, radio, and popular literature, as well as from relatives serving with military and naval forces.

The heightened public interest can be organized and directed to demand use of available new and improved materials, equipment, and techniques for insect control. Thus the developments resulting from intensified wartime research can be used to achieve a decade of unparalleled accomplishments in the field of arthropod-borne disease control.

A modernized post-war program of effective insect control will require the coordinated and integrated efforts of individuals as well as governmental and private organizations. The program will involve many professions and skills. Physicians, engineers, entomologists, parasitologists, public health

nurses and educators, laboratory technicians, and engineering aides will all have an important part in the program. Continuation and expansion of fundamental research, operational investigations, and well planned, efficiently conducted control projects will be required. There is no reason why wartime achievements cannot be bettered during peacetime. We have the tools, the know-how, and the reservoir of trained man power. To reach our goal it is necessary only to coordinate effort and resources.

## THE PROBLEM

It is not the intention of the writers to present an exposition of all fly- and mosquito-borne diseases in this paper. A brief review of the more important of these diseases in the United States, however, will serve to delineate the nature of the public health problems involved.

*Malaria*—Civilian malaria in continental United States has reached an all-time low during the past decade. Reported malaria mortality and morbidity dropped 85 per cent and 70 per cent, respectively. True, a great many malaria carriers have returned to all sections of the country from malarious regions overseas, but adequate precautions have been taken to combat possible outbreaks of this disease in both endemic and nonendemic areas. Of course the principal danger points are in sections of the country where active

transmission of malaria still occurs. Here, concentrated control efforts are being made which may result in more than merely holding the disease in check; they may reduce the infection rate to such an extent that the possibility of malaria eradication in continental United States may be plausible (Hollis, 1946).

*Dengue*—Outbreaks of this disease occasionally occur in portions of Southern United States. These outbreaks create considerable havoc because of the disabling effects of dengue. Dengue is transmitted by *Aedes aegypti*, a highly domestic mosquito, so control of this disease requires a thorough and painstaking house-to-house inspection program, an intensive educational campaign, and the application of proper control measures.

*The Arthropod-borne Encephalitides*—In a comprehensive review of the epidemiology of this group of virus diseases, Hammon and Reeves (1945) have indicated the important rôle that mosquitoes play in the transmission of members of this group. Encephalitis virus has been isolated in nature from some of our commonest mosquito species. The danger of the introduction of exotic diseases of this group, such as Japanese B encephalitis and Venezuelan equine encephalomyelitis appears to be quite real. These diseases are much more virulent than our native St. Louis or Western equine types. In the case of Japanese B encephalitis, for example, it has been demonstrated that six species of three genera of California mosquitoes can transmit this virus to animals.

*Poliomyelitis*—The exact rôle that arthropods play in the epidemiology of this disease is not known. Sufficient evidence is at hand, however, to indicate that insects such as flies may bring about increased dissemination of the virus. Paul, et al. (1941), Sabin and Ward (1941 and 1942), and Trask,

et al. (1943), have demonstrated the presence of polio virus in flies trapped in epidemic areas. Ward and his coworkers (1945) have detected polio virus in food exposed to flies in the homes of polio patients within an endemic area.

*Gastrointestinal Diseases and Food Poisoning*—Because of its habits and body structure, the housefly is peculiarly suited for an important rôle in the transmission of the gastrointestinal diseases, such as typhoid and dysentery. Flies feed readily on the filthiest excreta as well as the daintiest food materials, and pass freely from such matter as human excrement or sputum to clean, appetizingly-prepared food. Their sticky feet, proboscis, and body are excellent mechanical carriers for bacteria and other disease-causing organisms. Their habits of regurgitating droplets and extruding bits of excrement from their digestive system when feeding add to their efficiency as disease vectors.

*General Sanitation and Esthetic Considerations*—It is recognized that the specific diseases discussed do not comprise all of the mosquito- and fly-borne diseases, even in the United States. But these arthropods, together with ticks, roaches, bedbugs, lice, and possibly others, are important to our welfare for reasons other than disease transmission. From the broader public health aspect, obnoxious insect infestations in our communities should not be tolerated. Good public health depends upon thorough general sanitation. Accordingly, arthropods which are objectionable esthetically as well as those which transmit diseases should be controlled.

#### THE SOLUTION

The discovery and development of DDT provides a potent weapon in our struggle for improved environmental sanitation. As in other fields of public health, the preventive approach can be

utilized to a great extent. Thus control of arthropod-borne diseases may be accomplished by preventing vector breeding.

The means by which effective control of arthropods of sanitary importance will be achieved are: (1) by proper utilization of DDT; (2) through intelligent use of newly developed hand and power insecticide applying equipment; (3) through well directed and coordinated local, state, and federal programs; (4) by public health education programs; and (5) through continued operational and fundamental investigations designed to improve insect control techniques.

*Fly Control*—Effective fly control depends upon good general sanitation. Among the measures which serve to eliminate fly breeding places are: (1) proper garbage collection and disposal; (2) elimination of dumps; (3) use of incinerators or sanitary fills; (4) the installation of sanitary privies; and (5) the proper storage and disposal of manure. The use of DDT is no substitute for these practices; it is, instead, an extremely valuable supplementary measure. Where supplemented with good sanitary practices, the number of flies can be reduced usually to a negligible level in milk and food handling establishments by a DDT residual deposit applied to resting surfaces of flies, at the rate of 200 mg. of DDT per sq. ft. (approximately 1 gallon of 5 per cent DDT spray per 1,000 sq. ft.). With poor sanitary practices resulting in a high rate of fly breeding, DDT is much less effective. Nevertheless, DDT is more effective when used alone than other known fly control measures.

In areas with very poor sanitation, breeding places of flies should be treated with a  $\frac{1}{2}$  per cent DDT emulsion, solution, or suspension. Such treatments are not very effective against the fly larvae, but the residue kills a high percentage of adults that

emerge. Thus complete premise treatment is indicated. Use of effective fly larvicides is necessary, particularly in places where application of DDT to resulting surfaces is not practicable. Orthodichlorobenzene and paradichlorobenzene have been found to be more effective as fly larvicides than DDT. This is particularly true around garbage dumps and in privies.

Locating the actual sources of fly breeding is of considerable importance in combining intelligent sanitary practice with DDT treatment. Close inspection by adequately trained personnel is required. A cursory scouting of a dairy or other establishment often will not reveal the major breeding places. For example, in several dairies fly outbreaks of great proportions resulted from the careless handling of feed. It was scattered about in damp places and produced an ideal breeding medium for flies. In one city, the chief source of fly infestation in a large restaurant was a back alley where flies were breeding between the bricks of the pavement about the garbage cans. Spraying the alley resulted in good control of flies in nearby restaurants. It has been found that a complete residual premise spraying of a dairy in late winter or early spring, before the flies have become active, will result in almost complete eradication of the flies there for the season. This offers great promise in preventing fly breeding.

DDT sprays, mists, and thermol or mechanical aerosols are useful for effecting a rapid reduction in adult fly populations. Such application may be made with hand or power equipment. Hand sprayers fitted with special nozzles, small and large orchard power-sprayers, airplanes, or the various thermol and mechanical aerosol generators developed during the war may be utilized for this purpose. This treatment is most effective in open rural areas. Considerable difficulty in achiev-

ing the desired results may be encountered under urban conditions. As a matter of fact, much investigational work remains to be done on the problem of fly control in urban areas.

*Mosquito Control* — Public health workers have usually placed mosquito control in one of two categories: (1) control of disease-transmitting species, and (2) control of pestiferous species. Recent discoveries concerning the epidemiology of the encephalitides have added a number of so-called pest species to the disease vector category.

Although the measures used against disease vectors and pest mosquitoes are similar fundamentally, programs directed exclusively against the former, such as the Public Health Service malaria and dengue control operations during the present emergency, do involve certain specialized procedures. For example, our continental anti-malarial measures have demonstrated clearly the economy and effectiveness of utilizing the "species sanitation" method. This requires the application of entomological science to focus control energies on the specific vectors involved.

It is extremely unlikely that post-war mosquito control operations, whether for the control of disease or for the control of the nuisance mosquito, will be undertaken without adequate entomological guidance. The desirability of eliminating mosquito breeding places by physical corrective measures, where practicable, is well established. Underwater vegetation cutters and herbicides are useful control measures in certain situations. The U. S. Engineers, in collaboration with the Public Health Service, have used underwater cutters with marked success in eliminating the extensive growths of water chestnut from the Potomac River. This plant growth provided an excellent breeding environment for *Anopheles quadrimaculatus*. Its removal made

expensive larvicidal work unnecessary. Newly developed herbicides such as 2-4-D show promise of being a great help in destroying mosquito habitats.

In the near future, control of malaria-mosquito breeding in water impoundments will undoubtedly be done more extensively. Methods used will probably follow established practices. In this work much greater use should be made of mechanical equipment. Trees may be felled in many instances by power saws rather than by hand. Bulldozers and tractors equipped with special rigs, as described by Kiker and Sparkman (1945), may be used for a variety of purposes in connection with reservoir clearance. The latest improved devices for distribution of larvicides by hand, boat, land vehicles, and airplanes may be used to facilitate operations. These measures will result in considerable man-hour economy.

Any present-day discussion of insect control elicits comments on DDT. This material can be used prophylactically as an adulticide and a larvicide. The facts that it is toxic in very minute quantities and that it exerts a prolonged toxic effect when applied properly cannot be overemphasized. The residual adulticidal properties of DDT are being fully exploited in the Extended Malaria Control Program of the Public Health Service. Used as a residual spray in rural houses of endemic areas, DDT is the weapon for a widespread economical campaign against potentially malaria infected mosquitoes. Residual spraying in these houses is a selective action in controlling populations of the malaria vector, resulting in the death of those anophelines which rest on the walls of human habitation. Thus the potentially infective anophelines are destroyed.

DDT, dispersed as mists or aerosols, helps to solve one of the most vexing problems confronting mosquito control workers—the economical control of the



vast broods of flood-water and salt-marsh mosquitoes which periodically infest certain areas. DDT may be dispersed from mist or aerosol generators in airplanes or from those mounted on trucks, jeeps, "weasels," "ducks," or boats. During the two or three day interval that the mosquito broods remain near their breeding places, the highly potent adulticidal properties of DDT will prevent widespread migrations of the mosquitoes over the countryside.

The use of DDT as a mosquito larvicide will reduce application costs at least 70 per cent as compared with cost of other larvicides. Very minute quantities are required for successful work. Progress has been made, but much remains to be done in developing suitable equipment for distributing, over large areas of water surface, the small amounts of DDT required for successful operation.

It should be emphasized that caution must be used in the widespread application of DDT, since many beneficial insects and animals can be killed if it is used indiscriminately.

*Education*—The control of insects of importance in public health requires coöperation on the part of all individuals in a community. Stimulation of individual self-effort through educational media cannot be overemphasized. Enlightened public sentiment is essential to the success of any public health program. Modern training and educational techniques of demonstrated value should be used in connection with post-war insect control operations. Mention should be made of the fact that commercial pest control operators are adding professional engineers and entomologists to their staffs. Classes are being conducted to educate their per-

sonnel in the proper utilization of the newest and most effective techniques of control.

*Research*—It is anticipated that the investigation of public health insect control problems will be continued by public and private agencies interested in this subject. In Atlanta a center is being developed which is designed to broaden the efforts of the Public Health Service in the field of communicable disease control. This includes the control of the arthropod vectors of diseases. Among other functions, the center will conduct research in the development of equipment, materials, and operating techniques for improving field control measures. Investigations relative to biological and engineering projects will be continued. In these investigations emphasis will continue to be placed on arthropods related to public health. Coöperative control demonstrations with state health departments will be conducted. Technical consultation services and operational assistance in emergencies will be available to states and other agencies.

#### REFERENCES

- Hammon, W. McD., and Reeves, W. C. Recent Advances in the Epidemiology of the Arthropod-borne Virus Encephalitides. *A.J.P.H.*, 39:996-1004, 1945.
- Hollis, M. D. Post War Malaria Control in Continental United States. *J. Nat. Malaria Soc.* (in press).
- Kiker, C. C., and Sparkman, R. E. A Review of Equipment Used in Applying Malaria Control Measures on Impounded Waters in the Tennessee Valley. *J. Nat. Malaria Soc.*, 4:209-222, 1945.
- Paul, J. R., Trask, J. D., Bishop, M. B., Melnick, J. L., and Casey, A. E. Detection of Poliomyelitis Virus in Flies. *Science*, 94:395, 1941.
- Sabin, A. B., and Ward, R. Insects in Epidemiology of Poliomyelitis. *Science*, 95:169, 1942.
- Sabin, A. B., and Ward R. Flies as Carriers of Poliomyelitis in Urban Epidemics. *Science*, 94:590, 1941.
- Trask, J. D., Paul, J. R., and Melnick, J. L. Detection of Poliomyelitis Virus in Flies Collected during Epidemic of Poliomyelitis; Methods, Results, and Types of Flies Involved. *J. Exper. Med.*, 77:531, 1943.
- Ward, R., Melnick, J. L., and Horstmann, D. M. Poliomyelitis Virus in Fly-contaminated Food Collected at an Epidemic. *Science*, 101:491-493, 1945.

# American Journal of Public Health and THE NATION'S HEALTH

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## MEASURING THE GROWTH OF SCHOOL CHILDREN

THE primary business of children is to grow; and the evaluation of their success in this direction is a primary factor in the program of school health. Measurements of growth may often be of substantial value as a factor in the physician's clinical appraisal of health status. Furthermore, the results of such an appraisal are peculiarly valuable in interpreting to the child and to its parents the values of health, in a positive rather than a negative sense.

It was for this reason that we have asked two of the leading authorities in this field to prepare a special Review Article for this issue of the *Journal*. We are quite aware that the procedures they suggest are far in advance of what could be suggested as standard practice in the schools of the United States. It may be hoped, however, that in the next decade the conduct of school medical services may be raised from the low level which now obtains in many communities. For health officers and school authorities who desire to do a really competent job, this article offers a valuable guidepost as to how the task should be approached.

Drs. Stuart and Meredith are not satisfied with height and weight alone as measures of the growth of children. They consider it important to differentiate the proportionate parts played by development of the skeletal framework, of muscle tissue, and of subcutaneous fat in the growth process. They therefore suggest the addition of four other basic measurements, as follows: the breadth of the pelvic region and the circumference of the chest as criteria of skeletal development; the circumference of the calf as a criterion of muscular development; and a measurement at two selected points of folds of skin as a criterion of subcutaneous fatty tissue. The complete data required can—they believe—be obtained in a period of 8 minutes.

Quite as important as the basic data obtained, is the method employed for their analysis. Our reviewers recognize the great potential values of the Wetzel grid but believe its use should be combined with tabulation by percentile grades. The tables presented by them give data as to values for the first five of the criteria listed above, based on a study of 3,771 Iowa school children, for each 6 months' period from 5 years to 18 years of age. It is pointed out clearly that the results

should be interpreted by taking into account "the position held by each child in each measurement at each examination in relation to the customary ranges of variability for like sex and age."

The arbitrary comparison of a given individual with any assumed norm may be quite misleading. A study made years ago showed that children of pyknic Italian stock who were clinically undernourished showed high weight-height ratios. Another investigation showed that asthenic types in a southern area who were not undernourished showed low weight-height ratios. The comparison of the status of a given individual with the curve of his own previous developmental history is more significant. Even here, however, there are pitfalls. It is well established that within an orderly and normal pattern of growth and development the individual child proceeds at his own rate of speed and with his own proportionate rate of development of various tissue systems. Yet it remains true that marked deviation from a reasonable norm, or marked variation from the individuals' previous developmental chart, always raises a pertinent question. Observed deviations do not establish the existence of malnutrition, for example; but they do offer essential evidence which may indicate the need of more intensive study and which—in combination with other evidence—forms a part of the basis for sound clinical judgment. For such a purpose, Stuart and Meredith have provided a valuable tool.

## THE LASKER AWARDS

ONE of the high points of the Cleveland meetings was the first presentation of awards made possible by the generosity of the Albert and Mary Lasker Foundation under the plan announced last spring.<sup>1</sup> These awards are made, either to individuals or to groups, for outstanding achievements in either research or in the administrative application of research in the control of diseases which are recognized as major causes of death. The Committee on Awards under the chairmanship of Dr. George Baehr has made an admirable choice of the first recipients.

It was natural that the year 1946 should present an appropriate occasion for recognizing the outstanding development of coöperative research made by official and semi-official boards and commissions in meeting the emergencies of the war. The five group awards were all in this class.

First were honored the achievements of two such bodies created for the specific purpose of furthering the war effort—the Army Epidemiological Board, and the Board for the Coordination of Malarial Research. The first of these boards made contributions of the first importance to our knowledge of the respiratory infections, prepared vaccines for influenza and Japanese B encephalitis, and discovered the causative agent of infectious hepatitis. The Malarial Board, in addition to its contributions to the general etiology of the disease, made such progress in developing new anti-malarial drugs that a distinguished scientist has recently relegated quinine to the field of medical history.

Next came two long established agencies of the federal government—the National Institute of Health for its researches on a wide variety of epidemiological and nutritional problems—and the Bureau of Entomology and Plant Quar-

antine for the astonishing progress made in developing insecticides and repellents for the control of typhus fever and malaria.

The last of the group awards was made to the Northern Regional Research Laboratory at Peoria for its fundamental advances in the preparation of penicillin which made possible an enormously increased supply of that drug.

It is obvious that these discoveries, which were of such immediate military importance, are no less fundamental for our peacetime program of world health. In a period of years, they may well save more lives than those lost on the battlefield during the conflict.

The second group of five awards were made to individuals, selected with the same felicity displayed in the choice of the groups which were honored.

Fred L. Soper of the International Health Division of the Rockefeller Foundation was cited for his organization of the brilliantly successful campaigns conducted in coöperation with the Brazilian health service for the control of *Aedes aegypti* and *Anopheles gambiae* mosquitoes on the East Coast of Brazil; A. N. Richards of the University of Pennsylvania for the development of the penicillin program and other activities of the Committee on Medical Research of the O.S.R.D.; John F. Mahoney, of the U. S. Public Health Service, for his outstanding leadership in the treatment of syphilis by penicillin and other new procedures; Karl Landsteiner (who died three years ago) and his colleagues, A. S. Wiener and Philip Levine, of the Rockefeller Institute, for their basic researches on the R<sub>h</sub> factor; and Carl F. Cori of Washington University for his studies on carbohydrate metabolism and the mutual reactions of hormones in the human body.

The selection of four leaders in physiological chemistry, one epidemiologist and one administrator illustrates the wide scope of the field over which the Award Committee has ranged. The committee this year had the achievements of the World War and of years preceding the war to draw upon. Their successors will not find it easy to maintain the high standards which have been set in 1946.

#### REFERENCE

1. The Lasker Awards, Editorial, *A.J.P.H.*, 36:658 (June), 1946.

## CANCER CONTROL

SOME of the readers of this *Journal* will challenge the boldness of the title of this editorial. It is the belief of the editor, however, that we stand with respect to cancer today much as we stood with regard to tuberculosis forty years ago. We knew then that the individual case of tuberculosis could be arrested by prompt and adequate care; and a few pioneers believed that the organized application of our knowledge could accomplish substantial and far-reaching results in the reduction of the toll of disability and death taken by this disease. Tuberculosis has not been eliminated but it has been controlled. Some of us believe the same end can be measurably approached in the case of cancer.

There has recently been published an important review of actual progress in the development of cancer control activities on a state-wide scale which indicates substantial progress in building administrative machinery for the purposes outlined.<sup>1</sup> Charts are presented for every state in the Union, indicating by a central circle the existence of a state law establishing formally a program for the control of cancer. Next to this circle are three radiating segments indicating

specific cancer control activities of the state department of health, the state medical society, and the American Cancer Society. Finally, an outer series of six segments representing six major essential activities; hospital facilities, clinic facilities, pathologic diagnostic service, lay education, medical education, and statistical research.

The study in question is a pioneer effort and necessarily tentative and incomplete. We have no doubt that certain states will challenge the statements made about them. Yet the general picture is interesting and encouraging. Nineteen states are given credit for all the ten elements in the program as outlined (Alabama, Arkansas, Connecticut, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Massachusetts, New Hampshire, New York, Tennessee, South Carolina, Vermont, Virginia, West Virginia, and Wisconsin). Three others lack only health department leadership (and in one of these, California, the gap has recently been filled). Five other states lack state medical society leadership.

More serious is the finding that 23 states have no organized pathologic service; that 25 states carry on no statistical research; and that 27 states had, at the time of the survey, no state law specifically establishing a cancer program.

Data in regard to the number of general beds in proportion to population for each state are cited from the 1941 A.M.A. study, showing a range from under 200 beds per 100,000 population in 3 states (Arkansas, Kentucky, and Mississippi), to over 500 beds per 100,000 in 6 states (California, Colorado, Massachusetts, Montana, Nevada, and Wyoming). Of special interest are new data with respect to the ratio of state population to known cancer clinics. One such clinic per 50,000 population is considered a practical ideal. Only 2 states (Connecticut and New Hampshire) approximate this standard. In 20 states the ratio falls between 100,000 and 300,000 inhabitants per clinic. In 13 states the ratio is between 400,000 and 600,000. In 10 states it ranges between 800,000 and 2,000,000, and 3 states had no known cancer clinic at the time of the survey.

It would seem that the development of diagnostic services and cancer clinics is the most urgent need for the immediate future. George T. Pack<sup>2</sup> has reported on a series of 1,000 cancer cases with regard to the delay in securing a diagnosis and instituting appropriate treatment. The patient alone was responsible for delay in 44 per cent of the cases; the physician alone, in 17 per cent; while both patient and physician were at fault in 18 per cent. In only 21 per cent was there no serious delay on the part of either. Clearly, the most vigorous efforts to educate both the physician and the patient are urgently desirable.

The American Cancer Society has formulated and is carrying forward a broad and constructive campaign to further these ends. Its Service Program<sup>3</sup> contemplates the establishment and maintenance of facilities by which everyone, regardless of ability to pay, may secure information and diagnostic service with regard to cancer and be referred to a physician or hospital for any necessary treatment. The Society, working through its state and local units has drawn up plans for—

1. Information centers (perhaps one for each 10,000 population) where anyone may go to obtain general information about cancer and find out where to go for a thorough examination.

2. Detection Centers, for early preliminary diagnosis, not involving biopsy or x-ray.

3. Diagnostic and Treatment Clinics (perhaps one for each 50,000 population).

The American Cancer Society, through its national and local organizations, will not operate these facilities but will stimulate their development and assist in their support. The Society works in close coöperation with the U. S. Public Health

Service and the state health officers. The American Medical Association, the American College of Surgeons, and the state and county medical societies have taken—and will increasingly take—a prominent part in the program.

We commend to our American Public Health Association members, particularly health officers, nurses, and health educators, a study of the three original documents to which reference is made below.

#### REFERENCES

1. Cancer Facilities and Services: a Report from the National Advisory Cancer Control. *J. Nat. Cancer Inst.*, 6:239 (Apr.), 1946. National Institute of Public Health, U.S.P.H.S.  
(Part III on state-wide activities, prepared by the Cancer Research Division of the Connecticut State Department of Health.)
2. Pack, G. T. Recent Advances in Cancer Control. *Bull. Pan-Amer. San. Bu.*, 25:303 (Mar.), 1946.
3. *How to Develop a Service Program*. American Cancer Society, 350 Fifth Avenue, New York.

## BOOKS AND REPORTS

*All reviews are prepared on invitation. Unsolicited reviews cannot be accepted. All books reviewed in these columns may be purchased through the Book Service.*

**Tuberculosis and Industrial Employment** — Prepared by Oscar A. Sander, M.D. New York: National Tuberculosis Association, 1946. 16 pp.

This 16 page pamphlet has been issued to provide a guide to industrial physicians in the clinical evaluation and job placement of workers who have been diagnosed tuberculous. The classification of lesions approved years ago by the National Tuberculosis Association is offered for criteria of clinical status. In job placement the physician is advised to distinguish between non-dusty and dusty trades, and, among the latter, to keep in mind especially silica dust exposure trades because of the enhanced hazard they provide for the tuberculous. Adequate medical supervision by x-ray and refined sputum examinations of those accepted for employment are imperative.

Thorough knowledge and experience with tuberculosis and an understanding of the occupational hazards in the plant in relation to tuberculosis are essential. If industrial physicians have this understanding and provide facilities for proper medical follow-up many more persons with tubercular lesions may safely be placed at selected jobs than would be possible otherwise.

JOHN H. KORNS

**Folks Do Get Born**—By Marie Campbell. New York: Rinehard, 1946. 245 pp. Price, \$3.00.

*Folks Do Get Born* is the story of the granny midwives of Georgia. And Georgia's elderly Negro midwives are much like those in other southern states. One of the grannies said to Miss Campbell, "You know and I know—anybody

with sense and feelings knows—that to get real acquainted with folks you got to talk with them sociable, and the grannies ain't no exception." Miss Campbell talked "sociable" with many grannies and she listened with a kindly, understanding heart. She lets them speak for themselves in the tales she includes in the second part of the book.

She traveled over the state with the public health nurse-midwives and studied at first hand what public health workers call "the midwife problem." In the first part of the book, Miss Campbell presents the setting in which the granny midwife arose and plays her rôle today—the continuing lack of enough doctors and nurses and hospitals to care for pregnant mothers in most of the rural sections of the state, the granny's dedication of herself to do what she could for the "woman alone in her misery" and to train a successor before the "Lord viewed her to quit," the public health nurse-midwife's recent friendly supervision of the grannies and their response to her instruction and to the state licensing and retiring, the pioneer county's new maternity hospital "for the use of all mothers regardless of their ability or inability to pay" as a better way of looking after "women folks when they birth their babies," and the slow but sure ultimate passing of the granny midwife.

The book is delightfully written, beautifully illustrated with Clare Leighton's woodcuts. It is just the kind of warm, human, accurate record of that American institution—the hereditary granny midwife—that needed to be written. For every nurse, for everyone who lives or works with Negroes—and

that means all of us—there is inspiration as well as information and entertainment in this book.

HAZEL CORBIN

**Health Education in Rural Schools and Communities**—By *Nina B. Lamkin*. New York: Barnes, 1946. 209 pp. Price, \$2.50.

Health education in rural areas has been a highly neglected field of endeavor. It is therefore gratifying to take up a book which has grown out of and is geared to rural health problems. Miss Lamkin has drawn upon her long and varied experiences with rural people in the Middle West and Southwest to produce a book which embodies the simple but sound philosophy that health education should be a coöperative adventure in which all members of a community work together on practical problems of healthful living.

The book is intended primarily as a guide for school administrators and teachers in rural communities. It is divided into five parts as follows: Part I, Health Problems in Rural Areas; Part II, Helping Children in Rural Areas to Understand and Practice Healthful Living; Part III, Helping Children to Understand Life — The Rural High School—Community Cooperation on Community Problems; Part IV, The Teacher's Health and Preparation; Part V, Additional Helps.

The strength of the book lies in its many practical suggestions for making health a reality in the lives of rural people, especially rural children, and in its stress upon the importance of community health leadership by school personnel. Miss Lamkin is at her best in Parts II and III. In Part II, common rural health problems are taken up one at a time, and for each problem there is a brief discussion of it as it reveals itself in the rural setting, suggestions for discussion and for planning together, and lists of coöperative activities re-

ported by teachers in rural areas. Part III contains a suggested outline for a course in personal health and human relations in the secondary school.

Throughout the book community health resources, including public health department personnel and facilities, are made known. A case is built up for community health councils to plan and act on school and community health problems.

The book is written in a very readable style and should serve as a useful source of ideas for school administrators, teachers, and public health nurses working in rural areas.

RUTH E. GROUT

**Lectures on Preventive Medicine**—By *Harvey Sutton, O.B.E., M.D., D.P.H.* Sydney: Consolidated Press, Ltd., 1944. 658 pp. Price, 27/6.

The Director of the School of Public Health and Tropical Medicine of the University of Sydney has brought together Australian facts and experience for the benefit of medical students. Clearly presented in logical arrangement, the contents deal with human life history, environment, communicable diseases, and public health administration.

Teachers of preventive medicine and of public health, who will desire to have a copy of this instructive volume for reference purposes, will note with interest that the course for fifth year medical students "is able to work on a considerable basis of scientific and clinical preparation" because preventive aspects permeate the work of the student, notably in physiology, bacteriology, and obstetrics. "The aim of the course is to introduce the student to the world in which his labours will be set, to present to him the larger problems of social life and health with which he will be faced, and to suggest ways in which the practitioner is so often able to help his patients and to contribute in some measure to the welfare of his



generation. To do this well implies some knowledge of the background of public health organization, and of the campaigns for health in which the practising doctor is a front-line unit."

IRA V. HISCOCK

**Milk Marketing Under Federal Control**—By *Carl McFarland*. *New York: Milk Industry Foundation*, 1946. 205 pp. Price, \$7.50.

Sanitary control of milk has been a legitimate subject for government regulation for nearly a century. Economic control of the dairy industry by government is, however, of more recent origin. In 1933 Congress passed the Agricultural Adjustment Act, which was amended in 1935, and promptly thereafter declared unconstitutional, in part, by the United States Supreme Court. In 1937 Congress adopted the Agricultural Marketing Agreement Act, which was amended in 1940, and has been upheld by the federal courts in a number of notable decisions.

This authoritative book, prepared by a former Assistant Attorney General of the United States, describes in detail the background, content, administration, and operation of this important statute. Not only does it give the substance of the Act, but also the intricate rules of practice and procedure which are now such an inevitable feature of federal administrative law.

The book is well documented, and has a number of useful appendices, showing among other matters the legislative history of the law, and the marketing orders in various jurisdictions. There is a good index.

Although designed primarily for members of the milk industry, the book should also be of interest and value to official milk inspectors and all others who are concerned with the regulation and control of milk, a food now recognized as being acutely affected with a public interest.

JAMES A. TOBEY

**Summary Report (Pacific War)**—By *U. S. Strategic Bombing Survey*. *Washington: Gov. Ptg. Office*, 1946. 32 pp.

Here is a short, concise report on the strategy of the Japanese in the War of the Pacific and the way we were able to circumvent them in their aims. In addition to its brevity it is authentic and written in an impartial vein. It outlines briefly the steps of the Japanese in their offensive and the defensive measures we took, with the final decisive offensive steps that culminated in our victory. Two maps illustrate the report.

Of particular interest to public health workers are the two pages given to a consideration of health and morale of the Japanese civilian population under assault and a description of the effects of the atomic bomb.

FRANCIS B. ELDER

**Modern Development of Chemotherapy**—By *E. Havinga, H. W. Julins, H. Veldstra, and K. C. Winkler*. *New York: Elsevier Publishing Company*, 1946. 175 pp. Price, \$3.50.

An important series of monographs on the progress of research in Holland during the war is being issued under the editorial direction of R. Houwing of Delft, and J. A. A. Ketelaar of Amsterdam. These monographs, released on VE Day, report the secret research intensively carried on in Holland under the oppressive burden of the Nazi occupation. Several monographs will deal with medical subjects, including one on nutrition by B. C. T. Jansen, another on sex hormones by S. E. deJongh and J. H. Gaarenstroon, and one on embryology by M. W. Woerdenman and C. P. Raven. It is a remarkable example of scientific fortitude which our Dutch colleagues have given us in carrying forward so much significant work in the face of Nazi oppression.

This volume on the development of chemotherapy in Holland during the war has been summarized from the chemical standpoint by Havinga and Veldstra, while pharmacological and clinical studies are summarized by Julius and Winkler. Julius, Winkler, and their associates report much interesting work on the mechanism of action of sulfonamides, with particular reference to antagonists and activators. Veldstra, Havinga, and their associates report ultra-violet absorption spectra on a number of sulfa compounds. It is proposed that *p*-aminobenzoic acid reacts with nucleoproteins. It is inferred that sulfa compounds interfere with the mechanism of division of microorganisms rather than with the mechanism of growth. Many interesting sulfa derivatives were investigated from the standpoint of influence on enzymes.

While most of the volume is concerned with sulfa compounds, there is a short chapter by J. J. D. deWit on antibiotics. The Dutch work began from the observations of van Luijk in 1938 when he showed the possible importance of metabolic products of microorganisms in medical therapeutics. He obtained an antibiotic factor from *Penicillium expansum*, which is thermostable and capable of extraction. The active agent is called "expansine." It is believed to be identical with "clavicine" which was isolated by the English. It has been used clinically in treating fungus diseases.

It is clear from the work summarized in this small volume that Dutch chemotherapists have remained active under the most trying circumstances. With restoration of desired scientific intercourse, great stimulus should be afforded for rapid developments of chemotherapy in the Netherlands.

CHAUNCEY D. LEAKE

**The Prevention of Communicable Diseases. Pupil's Guide Book—By**

*Division of Health and Physical Education, Department of Education, Baltimore, Md., 1946. 37 pp. (mimeographed).*

Pupil study guides are always a useful adjunct to any school health instruction program. When these guide books contain problems for consideration which bear directly on the students' daily living needs and experiences they are doubly effective.

This junior high school unit was prepared by a group of teachers under the general supervision of Dr. Lillian B. Davis, Health Education Consultant in the Baltimore school system. Ten problems related to communicable disease control are taken up in logical order. For each problem, background information, practical study questions, and suggestive activities are skillfully interwoven. Young people using the guide should succeed in developing a sound understanding of everyday measures for disease prevention and control.

RUTH E. GROUT

**A Bibliography of Infantile Paralysis—1789–1944—Prepared under the direction of The National Foundation for Infantile Paralysis. Philadelphia: Lippincott, 1946. 672 pp. Price, \$15.00.**

This unusual volume, dedicated to Franklin Delano Roosevelt, sponsored by Basil O'Connor, edited by Morris Fishbein, and compiled by Ludwig Hektoen and Ella M. Salmonsens, is an index of 8,320 articles published on infantile paralysis, from Underwood's "Debility of the Lower Extremities" in 1789, to the end of 1944.

The numbered articles are quadruplically indexed in their listing in the body of the book alphabetically, by years, with added indices by author and by subject.

A large proportion of the articles indexed are followed by abstracts which are, in view of the magnitude of such an

undertaking, astonishingly accurate and adequate. For a compilation of this sort errors are surprisingly few.

Only one possible improvement comes to mind—if there had been any way of doing it. If the references could have been one, two, or three starred, the investigator would have had a Baedeker for his travels in the realm of research. Certainly with this volume investigators will be able to take better aim in their work.

The book is intended primarily for the student of the disease, but its chronological arrangement with the abstracts constitutes "the story of infantile paralysis."

W. LLOYD AYCOCK

*Marine Microbiology—By Claude E. Zobell, Ph.D. Waltham, Mass.: Chronica Botanica Co., 1946. 240 pp. Price, \$5.00.*

A comprehensive critical review of knowledge of aquatic bacteria, chiefly marine, and of their rôles in: transformation of organic matter; precipitation of calcium, iron, manganese, sulphur; the possible formation of petroleum; and interrelationship with other aquatic flora and with the fauna. The abundance of bacteria in bottom deposits, the long-time changes induced therein, and bacterial activities in the nitrogen and phosphorus cycles are emphasized. Of chief interest to sanitarians are the chapters on: Collection of marine water and mud samples; methods for enumerating marine bacteria; factors influencing their distribution in the sea; sanitary aspects of marine microbiology; and economic importance of marine microorganisms. Stress is laid on avoidance of metal sampling equipment; necessity for quick cooling of plates after inoculation, since many marine bacteria are killed by 10 minutes at 30°C. The media are highly specific, even the best medium revealing about one-tenth of the

bacteria present. These bacteria cause liquefaction of chitin, discoloration of boiled lobster and salt fish, destruction of cordage, nets, corks, and are the chief cause of spoilage of fish, with deterioration even below  $-5^{\circ}\text{C}$ . Fresh seawater is bactericidal in cultures and in open sea, coliform bacteria rarely extending beyond a mile from sewer outfall into sea. The book contains 22 pages of useful bibliography and is broad in outlook, covering aspects of geology, marine ecology, and oceanography, in addition to an introduction to the new and highly promising field of hydrobacteriology. T. C. NELSON

*Modern Management in Clinical Medicine—By Frederick K. Albrecht, M.D. Baltimore: Williams & Wilkins, 1946. 1238 pp. Price, \$10.00.*

The purpose of this volume "is to present . . . a clear picture of the rationale of therapy together with useful and usable information, in detail, about the technique of therapy." On the whole, this has been done effectively. The rationale of treatment is based on very broad considerations of the etiology, pathology, and physiology of the diseases discussed. Diagnosis is also covered, quite thoroughly in most instances. Very detailed suggestions on history-taking are made, both for the general medical history and for several specific diseases and organ systems. An extremely broad range of diseases is considered, including "tropical" diseases as well as those commonly encountered in North America. There are suggestions for immediate action, further diagnostic investigation, and sources of additional information for almost any tentative diagnosis one might make, and for a great many conditions detailed methods of treatment are given.

One feels much sympathy for the author in his efforts to get the latest information on a wide variety of sub-

jects through all the processes of publication before newer ideas superseded them. He has done this well enough so that one can be charitable with the occasional evidences of haste and incomplete evaluation.

There are many points with which specialists may take issue—errors of emphasis, incomplete descriptions, some specific methods of therapy. The discussion of food poisoning and its treatment is an example. The best references have not been given in all cases. The use of trade names, while often helpful, leads at least once to an unfortunate outcome (Neoprontosil for amebiasis). Frequent misspellings are an annoyance. It would have been helpful to outline in one place a method of approach to the solution of the problem of fever without localizing signs or symptoms. For the public health worker who seeks a handy reference with which to refresh his knowledge when questions of clinical management arise, this should be a useful volume. There is much new information in it, organized so it can be found easily. RODNEY R. BEARD

**Fee and Fee Bills: Some Economic Aspects of Medical Practice in 19th Century America—***By George Rosen, M.D. Baltimore: Johns Hopkins Press, 1946. 93 pp. Price, \$1.50.*

This monograph provides a good reference background for those wishing to study the evolution of medical fees in this country. Although the evidence from fee bills may not portray the actual charges made by physicians in individual practice, it probably does constitute a reliable basis for establishing trends and making comparisons between various sections of the country.

It is particularly interesting to note from the earliest opinions of the medical profession reported by the author and recurring throughout the period covered by his study, that there appears

to have been concern with the problems of the "sliding scale" and of the credit system. Evidently repeated efforts on the part of the profession for over a century to control the former and to eliminate the economic hardship to the doctor of the latter have been largely unavailing.

EDWARD S. ROGERS

**Psychiatry for Social Workers—***By Lawson G. Lowrey, M.D. New York: Columbia University Press, 1946. 336 pp. Price, \$3.50.*

The well trained public health nurse has a knowledge of mental ills and maladjustments. She recognizes symptoms and observes their effect on family life, but she does not always know when psychiatric care is imperative. Many points as to what the rôle of the nurse, as well as the social worker, should be in the care of these patients are clarified by Dr. Lowrey's book. The author assumes that the reader has knowledge of mental maladjustment and mental illness, mental defect and convulsive disorders. With this assumption he explains the meaning that deviations in mental functioning may have for those who work for the health and welfare of such patients and their families. He covers such practical points as which symptoms may be indicative of serious consequences unless psychiatric care is obtained, what can be done to help certain patients maintain the level of adjustment they may have achieved as the result of treatment, the kind of work patients suffering from convulsive disorders may safely undertake, and various implications of neurotic manifestations. The chapters on the Neuroses and the Behavior Disorders will be of particular interest to public health nurses because they encounter such patients so frequently in their daily work.

The author is conservative in his

evaluation of the various kinds of psychiatric treatment, pointing out its limitations with certain types of cases, as well as the encouraging results with other types. The material contained in this book will give the social worker certain assurance both in understanding and working with patients who show some mental deviation. It will also help her to accept limitations as to what can be done for patients with serious mental ills. When a more comfortable and satisfactory level of adjustment can be achieved, resources to further this end are suggested. The responsibility the social worker should assume in the treatment of these patients is clearly indicated. Since the aim of the book is to increase the social worker's diagnostic acumen rather than to give method and procedure, it will be a useful source of reference for nurses, as well as social workers who are working with individuals to promote their health and welfare.

HESTER B. CRUTCHER

**Research and Regional Welfare—**  
*Edited by Robert E. Coker. Chapel Hill, N. C.: University of North Carolina Press, 1946. 229 pp. Price, \$3.00.*

This publication is a compilation of papers presented at a conference on regional research held at the University of North Carolina. The papers cover a broad range—the humanities and social science, nutrition and public health, industry, agriculture, and fisheries. Each paper gives recent research data within the subject covered, and each emphasizes the need for additional research in every phase of living in the Southeast.

The addresses assembled represent distinguished leaders from the Far West, the Middle States, the North-

eastern and the Southeastern Regions. The need for research as a necessary step to regional and national planning for the more abundant type of daily living is stressed throughout.

Public health workers, especially of the Southeast, will find the two papers on public health and nutrition of interest. Research in Nutrition, is presented by Dr. Russell M. Wilder of the Mayo Foundation for Medical Research. Dr. Wilder points to the South as a valuable contributor to research in modern medicine. "The triumphant march in modern medicine, with impending conquest of plagues such as typhoid fever, hookworm, malaria, and amebic dysentery, has been nowhere more dramatic than in these southern states. Nor have state and county health departments anywhere been better organized, or manned by more faithful servants. Millions of persons today owe their lives to the vision and devotion of those who made possible these triumphs."

Dr. Wilder's paper presents the dramatic story of the discovery of the cause of pellagra, its treatment and prevention. He then indicates a way to better nutrition through research to improve the quality of foods, especially by means of breeding improved varieties of the more commonly used foods. Seed, soil, and climate are important factors in a higher nutritional content through breeding. Loss of nutritional values in the kitchen is indicated. Poor nutrition plays a part in the etiology of such diseases as tuberculosis and malaria.

There is included a paper on Medical Research—The Foundation for Future Progress in Health and Public Welfare, presented by James Stevens Simmons, Brigadier General, Office of the Surgeon General.

REBA F. HARRIS

## A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

**Back to Normal**—Except in those states which enforce anti-fireworks laws, the first post-war glorious fourth produced its usual grisly crop of the maimed and the blinded.

ANON. Sixth Annual Summary of Fourth of July Injuries. *J.A.M.A.* 132, 8:442 (Oct. 26), 1946.

**Ergo Propter Hoc**—In a North Jersey epidemic it was found that over half the poliomyelitis patients had carious teeth with pulp exposed, whereas in a similar group of well persons less than a quarter had like exposure of pulp. In populations where fluorine in the drinking water results in a lowered incidence of caries there was found also a lower incidence of polio than in comparable communities lacking fluorine in drinking water. There, friends, are a couple of two's and two's put together at your own peril.

AISENBERG, M. S. Further Studies of Exposed Pulp as Portal of Entry for Poliomyelitis Virus. *J. Am. Dent. A.* 33, 17:1109 (Sept. 1), 1946.

**Syphilis Treatment Schedules**—You will be encouraged by this progress report on the modern treatment of syphilis. Gradually, experience is piling up to the point at which definite schedules may be set. Apparently the percentage of cures is increased if a few doses of bismuth are added to the penicillin regimen. Periodic check-ups are going to be needed in the future as much as in the past.

HELLER, J. R., JR. Results of Rapid Treatment of Early Syphilis. *J.A.M.A.* 132, 5:258 (Oct. 5), 1946.

**Gleaned from a Large Pneumonia Epidemic**—Despite advances in treatment, pneumococcal pneumonia remains

an important cause of death. Two factors influencing the pneumonia rate are the non-bacterial respiratory disease rate and the pneumococcus carrier rate. About both factors there is something to be done.

HODGES, R. G., *et al.* Epidemic Pneumococcal Pneumonia (Five Papers). *Am. J. Hyg.* 44, 2:183 (Sept.), 1946.

**Where TB Mortality Is Lowest**—From Denmark comes this, "The general principle is now to advise all tuberculin-negative individuals over 7 or 8 years to submit to BCG vaccination." "BCG vaccination has been appreciated by the population." When, do you suppose, will we begin to protect those members of our professions who are most frequently exposed?

HOLM, J. Tuberculosis Control in Denmark. *Pub. Health Rep.* 61, 40:1426 (Oct. 4), 1946.

**Outstanding Sanitary Achievement**—How M.I.T. went about providing the best possible wartime dining service for the 2,100 military trainees. Staffs were instructed, examined, and supervised; foods sampled and tested; the best of equipment installed and sanitized.

HORWOOD, M. P. A Demonstration in Food and Utensil Sanitation at M.I.T. *The Sanitarian.* 9, 1:5 (July-Aug.), 1946.

**Medical Services for Small Industries**—"The standard of one hour (of medical attendance) per week per hundred employees is not adequate . . . in most small plants; two hours per week per hundred appears necessary." Health workers generally may find some use for this Canadian figure, passed on for whatever it may be worth to you below the border. "A plant with 400-500 em-

ployees justifies the employment of a full-time nurse," is another opinion for your record.

JONES, F. M. Supervision of Health in Small Plants. *Canad. Pub. Health J.* 37, 9:345 (Sept.), 1946.

**Pre-Horse-and-Buggy**—This writer lumps together dog catchers, justices-of-the-peace, poormasters, part-time health officers, and other anachronistic office holders, all of whom might better be transferred to more productive and rewarding work. Nothing short of full-time trained public health administration will ever do.

LUGINBUHL, M. Out of Local Governmental Chaos. *Survey Midmonthly.* 82, 10: 251 (Oct.), 1946.

**Compulsion Appears to Be the Answer: He Says**—In one British city, routine Wassermanns taken on all prenatal cases revealed 201 strongly positive reactors. As a result, 176 expectant mothers were referred to local V.D. clinics. All made one visit each, but only 37 persisted to receive minimum treatment. I wonder if American cities can make a better follow-up showing of our legally required prenatal blood tests.

MACFARLANE, W. V. Syphilis in Pregnancy: Preliminary Report on a Tyneside Investigation. *Pub. Health.* 59, 12:181 (Sept.), 1946.

**Hang Together?**—To meet changing needs, the nurses consider plans to develop standards of preparation and practice, to promote the welfare of nurses, and to make nursing services economically available to meet health needs. This forward-looking step may have suggestions for the rest of us.

RAYMOND RICH ASSOCIATES. Report on the Structure of Organized Nursing. *Am. J. Nurs.* 46, 10:648 (Oct.), 1946. (Condensed version) *Pub. Health Nurs.* 38, 10:523 (Oct.), 1946.

**Day-to-Day Deviations** — When does an epidemic become an epidemic?

Not until the incidence flares up above normal-for-the-season levels. The use of an industrial "control chart" method is suggested as a way to keep an eye on bad actors.

RICH, W. H., and TERRY, M. C. The Industrial "Control Chart" Applied to the Study of Epidemics. *Pub. Health Rep.* 61, 42:1501 (Oct. 18), 1946.

**A Start Is Made** — Throughout Maryland the State Health Department is providing care for the medically indigent through the services of physicians, dentists, laboratory technicians, and nurses as a new venture in public health.

RILEY, R. H. Medical Care in Maryland. *J.A.M.A.* 132, 6:326 (Oct. 12), 1946.

**Rabies, Poliomyelitis, et al.**—A round dozen of nervous diseases of viral origin plus others of unknown etiology comprise the ambitious field of this paper, a purpose of which is to urge more frequent use of virus laboratories.

RIVERS, T. M. Virus Diseases of the Nervous System. *J.A.M.A.* 132, 8:427 (Oct. 26), 1946.

**In Mice But Not in Men**—Human volunteers vaccinated with bacillary dysentery vaccine showed no significant immunity against experimental infection (mice did), but sulfadiazine controlled the disease and suppressed the carrier state.

SHAUGHNESSY, H. J., et al. Experimental Human Bacillary Dysentery. *J.A.M.A.* 132, 7:362 (Oct. 19), 1946.

**Family and Population Policies**—You may think this a peculiar place for a review of a book review. I include it here because the reviewer begins by dubbing the book "one of the most important single volumes on the population problem since Malthus." Concerned as you are with population problems, perhaps you had better hunt up the book, if it is that important. As a population policy "must" the author

lists nine reforms, any one of which is guaranteed to make our professional individualists see red.

STALLYBRASS, C. O. "Nation and Family" by Alva Myrdal. M. Officer. 76, 12:127 (Sept. 21), 1946.

**Pot Pourri**—If you want to know what our British colleagues talk about when they meet, you'll find a variety of papers on such diverse topics as rheumatic fever and prefabricated housing,

nurseries and the control of bovine tuberculosis, nutritive value of foods and town planning, the future of pediatricians and slum clearance, traffic problems and the health visitor. You'll love the polite blarney of the discussants: a quaint custom which we ignore so manfully over here. Altogether there are 200-odd pages of text.

RIGHT HON. LORD WOOLTON, P.C., C.H., D.L., *et al.* Health Congress at Blackpool. J. Roy. San. Inst. 66, 4:269 (Aug.), 1946.

## BOOKS RECEIVED

*Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.*

AMINO ACID ANALYSIS OF PROTEINS (Annals of the New York Academy of Sciences, Vol. XLVII, Art. 2, pp. 57-240). By William H. Stein, *et al.* New York: New York Academy of Sciences, 1946.

ANTIBIOTICS—Parts I and II (Annals of the New York Academy of Sciences, Vol. XLVIII, Art. 2, pp. 31-218). By Werner W. Duemling, *et al.* New York: New York Academy of Sciences, September, 1946.

BLIND AND PARTIALLY SEEING CHILDREN IN ILLINOIS. Chicago: Illinois Commission for Handicapped Children, 1945. 63 pp.

CANCER CAN BE CURED. By Alfred J. Cantor, M.D. New York: Didier, Publishers, 1946. 175 pp. Price, \$2.50.

THE CENTENNIAL OF SURGICAL ANESTHESIA. By John F. Fulton and Madeline E. Stanton. New York: Henry Schuman, 1946. 102 pp. Price, \$4.00.

THE CHEMICAL SENSES. By R. W. Moncrieff. New York: Wiley, 1946. 424 pp. Price, \$4.50.

THE CONTROL OF ATOMIC ENERGY. United Nations Department of Public Information. New York: Columbia Univ. Press, 1946. 42 pp. Price, \$2.25.

THE DAY CARE OF LITTLE CHILDREN IN A BIG CITY. By Leona Baumgartner, M.D., *et al.* New York: Child Welfare League of America, 1946. 33 pp. Price, \$5.00.

DAYTIME CARE—A PARTNERSHIP OF THREE PROFESSIONS. New York: Child Welfare

League of America, 1946. 31 pp. Price, \$.35.

THE DISPOSAL OF SYNTHETIC AMMONIA PLANTS. War Assets Administration. Washington: U. S. Gov. Ptg. Office, 1946. 10 pp.

THE EFFECTS OF ALIPHATIC NITROUS AND NITRIC ACID ESTERS ON THE PHYSIOLOGICAL FUNCTIONS WITH SPECIAL REFERENCE TO THEIR CHEMICAL CONSTITUTION (Bulletin No. 186, National Institute of Health). By W. F. von Oettingen. Washington: U. S. Gov. Ptg. Office, 1946. 76 pp. Price, \$.15.

ESSENTIALS OF MEDICINE. (15th ed.) By Charles Phillips Emerson, Jr., M.D., and Jane Elizabeth Taylor, R.N. Philadelphia: Lippincott, 1946. 688 pp. Price, \$3.50.

FIVE MILLION PATIENTS. By Allen W. Freeman, M.D. New York: Scribners, 1946. 299 pp. Price, \$3.00.

FOOD VALUES OF PORTIONS COMMONLY USED. (6th ed.) By Anna dePlanter Bowes and Charles F. Church, M.D. Philadelphia: College Offset Press, 1946. 58 pp. Price, \$1.50.

GREENWICH (Conn.) COMMUNITY PROGRAM. Greenwich Nutrition Committee. Greenwich: Greenwich Tuberculosis and Health Association, 1946. 124 pp.

HEALTH INSTRUCTION: YEAPFOOR, 1946. By Oliver E. Byrd. Stanford, Calif.: Stanford University Press, 1946. 399 pp. Price, \$3.00.



# ASSOCIATION NEWS

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## HARRY STOLL MUSTARD, M.D.

### PRESIDENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

The Governing Council at the 74th Annual Meeting unanimously elected Harry Stoll Mustard, M.D., of New York City, President of the American Public Health Association for the term ending with the close of the 75th Annual Meeting of the Association in September, 1947. Dr. Mustard replaces the late Milton J. Rosenau, M.D., who died in April, 1946, while President-Elect.

Dr. Mustard is a native of Charleston, S. C., where he was born October 10, 1888. After completing preliminary training at the College of Charleston, he received his M.D. from the Medical College of South Carolina, where he later served in clinical pathology and in the Department of Medicine. After four years of service as scientific assistant in the United States Public Health Service, he became Health Officer of Preston County, West Virginia, in 1923, and in the following year Director of the Child Health Demonstration in Rutherford County, Tennessee, where he served from 1924 to 1928. From 1929



Harry Stoll Mustard

to 1932 he served as Assistant Commissioner with the Tennessee State De-

partment of Health, and in the latter year became Associate Professor of Public Health Administration in The Johns Hopkins University School of Hygiene and Public Health, Baltimore, where he spent five years. From 1937 to 1940 he was Hermann M. Biggs Professor of Preventive Medicine at New York University College of Medicine. Since 1940 he has been identified with Columbia University and is at present Director and Professor of Public Health Practice in the School of Public Health. Dr. Mustard has served as visiting lecturer at Vanderbilt University, University of Kentucky, and the University of Pennsylvania. He has served as a member of the Board of Scientific Directors of the Rockefeller Foundation, a member of the Commonwealth Fund Committee on Health Activities and, since 1944, has been a

member of the National Advisory Health Council of the United States Public Health Service. He is a Fellow of the New York Academy of Medicine.

Dr. Mustard's identification with the American Public Health Association began in 1923, and he was elected to Fellowship in 1927. He has served two terms as elective councilor on the Governing Council, 1936-1942, and in 1940 became a member of the Executive Board. During the years 1941, 1942, and 1943 he served as Editor of the *American Journal of Public Health*, resigning in March, 1944, because of the pressure of other duties.

As an author Dr. Mustard is well known for his volumes *Cross Sections of Rural Health Progress*, 1930; *An Introduction to Public Health*, 1935, 2nd edition 1944, *Rural Health Practice*, 1936, and *Government in Public Health*, 1945.

## Sedgwick Memorial Medal for 1946 Awarded to Dr. Karl F. Meyer

THE award of the Sedgwick Memorial Medal for 1946 was made on November 12 during the Seventy-fourth Annual Meeting of the American Public Health Association in Cleveland, Ohio, by Dr. C.-E. A. Winslow, Professor Emeritus of Public Health, Yale School of Medicine, and Editor, *American Journal of Public Health*, who is Chairman of the Sedgwick Memorial Medal Committee. In presenting the medal, Dr. Winslow said:

"It is my privilege to present tonight, on your behalf, the William T. Sedgwick Memorial Medal to the sixteenth recipient of this distinguished award. This recipient possesses one qualification possessed by none of his predecessors. He comes from California. No

previous award has penetrated further than to the eastern city of Chicago.

"Perhaps in the past we have been like the lady from Boston who on undertaking a trip to the Pacific Coast was asked what route she was taking. 'I am not quite sure,' she replied; 'but I think we are going by way of West Newton.' Tonight, however, we emulate the hostess of Los Angeles who on displaying the magnificent view from Palos Verdes heights pointed out that 'This is the Pacific Ocean, the largest ocean in California.' Dr. Meyer is the Pacific Ocean of public health in California.

"He has travelled far—both geographically and intellectually—to reach his present eminence. Dr. Meyer was

born in Basel, Switzerland, in 1884, and took the degree of Doctor of Veterinary Medicine at Zurich in 1909 (and his Ph.D. at the same university in 1924). His Alma Mater—like the College of Medical Evangelists in his new home state—conferred upon him at a later date, the unusual honor of Doctor of Medicine, *honoris causa*.



Blackstone Studios, New York

Karl F. Meyer, M.D.

"This young Swiss came to the United States in 1910. He taught pathology and bacteriology at the University of Pennsylvania (1910-1913); and headed the laboratories of the Pennsylvania Live Stock Sanitary Board (1913-1914). In 1914 he found his real future in California, as Professor of Bacteriology and Protozoology at the University of California, and in 1915 he joined the staff of the Hooper Foundation for Medical Research of which he became Director in 1924. Since 1920 he has been a consultant to the State Department of Health of California, playing—behind the scenes—a major part in building up a state health

department of which this Association is proud. Since 1921 he has been Director of Research for the Western Laboratory of the National Canners Association; and since 1924 has served on the faculty of the University of California Medical School. He has held important lectureships at Harvard and Johns Hopkins; but his professional life has for more than thirty years centered about the great research institution which he has directed with such ability.

"Dr. Meyer's investigations have ranged over a wide field, including comparative pathology and bacteriology, protozoology, intestinal infections, immunology, and brucellosis. In recent years he has made contributions along four major lines. His studies of the botulism bacillus and other anaerobes and his other contributions to food technology have had far-reaching influences. His researches on the bacteriology and epidemiology of sylvatic plague have made him one of the world's foremost authorities on this subject. He was the first fully to realize and to emphasize the importance of psittacosis, and not only love-birds but even pigeons throughout the country have cause to dread his name. Most dramatic of all perhaps, was his pioneer discovery of the virus of Western equine encephalomyelitis, from which sprung the recognition of the danger of this disease to man and the part played by our common mosquitoes in its transmission. The first isolation of this virus was made from the head of a horse, cut off by Dr. Meyer who slipped surreptitiously round to the stable for this purpose while his assistant kept the recalcitrant farmer owner, armed with a loaded shotgun, parleying at the front gate.

"The Canadian Mounted Police gets its man; and Karl Meyer got his horse. In every one of the lines of research mentioned above he did not stop at the doors of the laboratory. When he lec-

tured to students, the flood of his oratory left them, at the end of the third hour, faint but still pursuing. He followed his discoveries out into the community. He forced the public to think and to act—to do something about food poisoning and plague, and psittacosis. We honor him tonight not as a brilliant technician alone, but as a great leader in the cause of public health.

"Throughout Dr. Meyer's career, there has run one major and fundamental concept—a concept expressed in one of his addresses under the title 'The Animal Kingdom, a Reservoir of Disease.' This was the key to his researches on plague, on psittacosis, and on encephalomyelitis. The fruitfulness of this conception, and of the training based on comparative pathology and comparative epidemiology, is illuminated by the fact that it was a dominant element in the thinking of two previous Sedgwick Medalists, Smith and Zinsser, and an important factor in the work of three others, McCoy, Park, and Rosenau.

"When William T. Sedgwick published his *Principles of Sanitary Science and the Public Health* in 1902, a sense of the importance of the mammalian carrier and the insect vector was just beginning to dawn. He recognized, in general, that men and animals were the primary sources of the germs of communicable disease; and in the case of malaria and yellow fever the first steps had already been taken. He says 'The importance of the bites and stings or other punctures of the skin by insects, which has long been recognized theoretically, has recently received fresh emphasis and attention owing to the results of investigations upon the hitherto obscure but widespread disease known as malaria.' Two years before, at the 1900 meeting of this Association, Reed and his colleagues had made the first presentation of their findings on yellow fever.

"Just the corner of the curtain had been lifted. Forty years ago we had no certain knowledge about bubonic plague or typhus fever—still less about dairy cattle and horses as reservoirs of brucellosis and encephalomyelitis, or the danger from psittacine birds. Sedgwick's alert and questioning spirit would have rejoiced if he could have looked forward to the control of yellow fever and plague and typhus fever and to the progress made in this war against malaria. On behalf of William T. Sedgwick—as well as of the American Public Health Association—I hand to you, Dr. Meyer, the Sedgwick Medal for 1946 in recognition of your brilliant part in revealing the secrets of diseases transmitted by animals to man and of your vigorous and enlightened service in building up the public health program of the West Coast and of the nation."

In accepting the award, Dr. Meyer made the following reply:

"It is a great honor and privilege to refresh with you the memory of William Thompson Sedgwick, a supreme teacher, pioneer in physiology and sanitary science, a philosopher on the problems of human relationship, and a zealous public servant.

"This occasion is a particularly fitting one on which again to acknowledge with all the force at our command, his continuous spiritual leadership in teaching, which permeates this Association and the public health movement in America. As heirs of his knowledge and methods, an eminent group of pupils, 'Sedgwick's Boys,' continue to remind us that progress will be made through knowledge. Nearly a century ago, as a forward looking scientist, Professor Sedgwick appreciated fully the function of science as a universal benefactor of humanity. He likewise realized that science would some day be held more or less responsible for human conduct. This time has arrived.

"It is therefore appropriate to recall that he said, 'The remedy for defects of conduct in an age of science is more science. For me the way to salvation through science can only come through more and better science. I fully believe that if we had more complete knowledge, so that the consequences good or bad of every act could be accurately foreseen and foretold; if chance were wholly eliminated and inflexible law stood revealed in its place, much of the evil doing of time—some of which comes from ignorance, some from half knowledge, some from error, but probably most from reliance on trick or chance, with the uncertainty of penalty and the hope of escape from consequences—would never occur.'

"Always ready to serve, he never failed to emphasize that scientists and technicians in public service are servants and not rulers of the people. How, then, can all mankind best be maintained at a level of bodily efficiency and well-being, and how can we, once that minimum has been reached, secure the greatest possibilities for social and intellectual development? This question constantly engaged his mind, and none felt as keenly as did Professor Sedgwick the disastrous consequences of self-satisfied isolation which followed the first world war, and left weaker nations to stagger to their destruction.

"In an introductory address to a series of lectures delivered at the University of California in 1919, which left an indelible imprint on my memory, he said: 'Henceforward, whether we will or no, whether we like it or not, we must have dealings with the European nations. Henceforward, we are an integral part of the world's political family and it has now come home to most of us that the world of our forefathers has disappeared, and that ours is a new world. Together with this goes that shrinkage of the world already referred to which makes the question, Who is my Neighbor? superfluous; for all nations are our neighbors.' Let us strongly hope that these facts, so wisely foreseen by Professor Sedgwick, will be fully realized by the political leaders now deliberating the reconstruction of civilization.

"I accept this medal and the honor conferred upon me by the American Public Health Association, but I do so with a feeling of deep humility because I recognize how great have been the contributions of my colleagues and associates, whose devotion to the cause of saving human life remains an everlasting incentive. Guided by the example and tradition set by the purposeful life of William Thompson Sedgwick, we will go forward together, here and abroad."

## APPLICANTS FOR MEMBERSHIP

*The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.*

### *Health Officers Section*

Gordon L. Anderson, M.D., D.P.H., 227 N. Mitton St., Sarnia, Ontario, Canada, Director, Lambton Health Unit  
Herman J. Bennett, M.D., 317 W. 92nd St., New York 25, N. Y., Trainee-Health Officer, New York City Health Dept.  
Calmes P. Bishop, M.D., 519 S. Third St., Muskogee, Okla., Director, City-County Health Unit

Revis A. Brannon, Jr., M.D., Southeastern Health District, Lucedale, Miss., Director  
John S. Chamblee, M.D., Nash County Health Dept., Nashville, N. C., Director  
Edward M. Cohart, M.D., 800 E. 14th St., Brooklyn 30, N. Y., Trainee, Health Officer, New York City Health Dept.  
Clara M. Erdelyi, M.D., Leake County Health Dept., Carthage, Miss., Health Officer

Sidney S. Goldman, M.D., 1327 Pine St., Philadelphia, Pa., Acting Senior Medical Officer, State Dept. of Health

James F. Harrell, M.D., Box 249, Bardwell, Ky., Health Officer, Ballard-Carlisle County Health Dept.

Robert D. Hicks, M.D., 102 Moore St., Chester, S. C., Director, York-Chester-Lancaster County

Henry E. Jenkins, M.D., Southside Health Dept., Farmville, Va., Health Officer

Ellsworth H. John, M.D., County Health Dept., Hardinburg, Ky., Health Officer

Floyd Johnson, M.D., Columbus County Health Dept., Whiteville, N. C., Health Officer

Clifford V. Mason, M.D., 576 Callan Ave., San Leandro, Calif., Health Officer, Alameda County Health Dept.

Will M. Miller, M.D., Box 1135, Corsicana, Tex., Acting Director, Corsicana-Navarro County Public Health Unit

Walter J. Pennell, M.D., 367 Main St., Wakefield, Mass., District Health Officer, State Dept. of Health

Maurice L. Peter, M.D., M.P.H., 918 N. Seminole, Okmulgee, Okla., Director, Okmulgee County Health Dept.

Jackson T. Ramsaur, M.D., Rutherford-Polk Dist. Health Dept., Rutherfordton, N. C., District Health Officer

George Rosen, M.D., Ph.D., 285 Riverside Drive, New York 25, N. Y., Junior Health Officer, New York City Health Dept.

Mildred E. Scott, M.D., Box 167, Harrisonburg, Va., Health Officer, Rockingham-Harrisonburg Health Dept.

Raymond E. Smallwood, M.D., 1226 Wilson, Arkadelphia, Ark., Medical Director, Dist. Health Unit 3

Seth E. Smoot, M.D., P. O. Box 41, Provo, Utah, District Health Officer

John E. Souter, M.D., 111½ W. Oklahoma Ave., Guthrie, Okla., Medical Officer, Logan County Health Dept.

Paul M. Spurney, M.D., 3400 Lee Rd., Shaker Heights 20, Ohio, Director of Health

Abram F. Stanley, M.D., Harrison, Ark., Medical Director, Public Health Dist. 15, State Dept. of Public Health

Nemesio Torres-Munoz, M.D., Avenida Boliviana 638, Cochabamba, Bolivia, S. A., Director, Servicio Especial de Profilaxis

Lee E. Traul, M.D., Lawrence Block, Room 12, Bellefontaine, Ohio, Health Commissioner, Logan County General Health Dist.

Loren Wallin, M.D., Wadesboro, N. C., Dist. Health Officer, Anson-Montgomery District Health Dept.

William B. Wild, M.D., M.P.H., Health Dept.,

Mansfield, Ohio, Health Commissioner, Mansfield and Richland County Health Dept.

### Laboratory Section

Ruth R. Almaden, M.S., State Board of Health, Little Rock, Ark., Director of Hygienic Laboratory

Marvin D. Beery, MDETS, Fitzsimons General Hospital, Denver, Colo., Instructor, Laboratory Section

Lucile L. Cheney, 64 Chapel St., Augusta, Me., Laboratory Technician, State Bureau of Health

Pauline R. Colmey, 155 East Lake Rd., Penn Yan, N. Y., Yates County Senior Technician

Lena M. Conte, 886 S. Broad St., Trenton, N. J., Bacteriologist, War Dept., Army Medical Center, Washington, D. C.

Helen M. Fitzgerald, Research Laboratory, U. S. Marine Hospital, Staten Island 4, N. Y., Secy. to Social Science Analyst, Venereal Disease Research Laboratory

MacDonald Fulton, Ph.D., Bowman Gray School of Medicine, Winston-Salem, N. C., Teacher of Bacteriology

Angelo M. Gnassi, M.D., 130 Wegman Parkway, Jersey City, N. J., Director of Laboratories, Medical Center

Luis Manuel Gonzalez, Ph.D., School of Tropical Medicine, San Juan, Puerto Rico, Asst. Professor of Bacteriology

Ad Harris, U. S. Marine Hospital, Staten Island, N. Y., Serologist, Venereal Disease Research Laboratory

Catherine E. Harris, 1719 N.E. 18th St., Oklahoma City 5, Okla., Principal Serologist, State Board of Health

Harold C. Hulme, Rd. 1, Leavittsburg, Ohio, Teacher, Senior High School, Dept. of Biological Science

Jaqueline B. Jonkowske, 119 E. 29th St., New York 16, N. Y., Research Technician, Rockefeller Institute for Medical Research

John F. Kent, A.M., Army Medical Center School, Washington 12, D. C., Chief, Research Section, Division of Serology

Sidney J. Klein, Ph.D., Veterans Administration Hospital, Van Nuys, Calif., Serologist

Edward C. Knoblock, A.B., 1555 East Alameda Ave., Denver, Colo.

Jean E. Lusk, 1320 11th St., Douglas, Ariz., Medical Technologist, Douglas City Laboratory

Lois J. Lynch, 4 Fiske Ave., Bradford, Pa., Laboratory Technician, Bradford Hospital

Seward E. Miller, M.D., 1396 Emory Rd. N.E., Atlanta, Ga., Director, Division of Laboratory Services, USPHS Communicable Disease Center

Professor Maurice Panisset, 2900 Mount Royal Blvd., School of Hygiene, Montreal, P. Q., Can., Dept. of Bacteriology

Lolita Pannell, 1702 Massachusetts St., Lawrence, Kan., Student, Kansas University

Margaret N. Pickard, M.S., 501 4th Ave., N., Twin Falls, Ida., Senior Bacteriologist, State Dept. of Public Health

Chester W. Read, Rt. 4, Box 111, Watsonville, Calif., Fresh Frozen Foods Co.

Edythe J. Rose, M.A., National Institute of Health, Bethesda 14, Md., Assoc. Bacteriologist

Victor G. Rubenstein, M.D., 849 S. Normandie Ave., Los Angeles 5, Calif., Asst. Professor, Clinical Pathology, U.S.C. Medical School

Maurice Saint-Martin, M.D., 1570 St. Hubert St., Montreal, Que., Canada, Bacteriologist, Ministry of Health

Shivraj Nandan Prasad Sinha, M.B., D.P.H., 55 Shattuck St., Boston, Mass., Medical Officer of Health, Bihar Public Health Service, India

Richard C. Wadsworth, M.D., 489 State St., Bangor, Me., Assoc. Pathologist, Eastern Maine General Hospital

Ralph H. Weaver, Ph.D., University of Kentucky, Lexington, Ky., Professor of Bacteriology

Stanley E. Wedberg, Ph.D., Univ. of Conn., Storrs, Conn., Asst. Professor of Bacteriology

Carl R. Woodward, Jr., E. R. Squibb & Sons, New Brunswick, N. J., Section Head, Bacteriological Production

#### *Vital Statistics Section*

Francis R. Allen, A.M., 521 E. 17th Ave., Tuscaloosa, Ala.

W. V. Charter, D.P.H., Bureau of Medicine and Surgery, Navy Dept., Washington 25, D. C., Deputy Director, Navy Medical Statistics

Lillian R. Freedman, 2515 K. Street, N.W., Washington 7, D. C., Statistician, Childrens Bureau

C. Horace Hamilton, M.S., Box 5428, State College Station, Raleigh, N. C., Head, Dept. of Rural Sociology, North Carolina State College

Harry Lynch, 375 Riverside Drive, New York 25, N. Y., Medical Statistician, Metropolitan Life Insurance Co.

Donovan J. McCune, M.D., The Babies Hospital, 3975 Broadway, New York 32, N. Y., Professor of Pediatrics, College of Physicians and Surgeons, Columbia University

Emma G. Pregnall, 217 Calhoun St., Charleston 17, S. C., Secretary-Clerk, Charleston County Health Dept.

Elizabeth L. Skau, 1629 Columbia Rd., Washington 9, D. C., Statistician, Navy Dept.

#### *Engineering Section*

Sidney A. Berkowitz, 4 West Oak St., Arcadia, Fla., Dist. Sanitary Engineer, Southwestern Florida Health District

Claude E. Boles, 514 Edgeland Place, Birmingham 9, Ala., Asst. Chief Sanitary Inspector, Tennessee Coal, Iron and Railroad Co.

Jose P. Bongiovanni, 1018 San Jose, Montevideo, Uruguay, S. A., Chief Engineer, Domestic Sanitary Works

Clarence L. Bradley, 6 Roberts St., Fargo, N. D., Sanitarian, City Health Dept.

Charles E. Brettell, 1770 S.W. 9th St., Miami, Fla., Supervisor of Rodent Control, Dade County Health Unit

Charles R. Brown, North Carolina State Board of Health, Raleigh, N. C., Asst. Director of Typhus Control

Allan T. Butler, 300 Public Safety Bldg., Seattle, Wash., Chief Sanitarian, City Dept. of Public Health

William H. Cranford, 820 West College, Blackwell, Okla., Sanitarian Grade II, Kay County Health Dept.

Herbert W. Davids, M.S., 4 Herbert St., Baldwin, N. Y., Junior Sanitary Engineer, Nassau County Health Dept.

Melvin A. Dobbs, 325 East Broadway, East St. Louis, Ill., Sanitary Engineer, East Side Health District

George H. Eagle, State Dept. of Health, Columbus, Ohio, Asst. Engineer

Bruce R. Ford, M.S., 99 Meadow Lane, Jefferson City, Mo., Intermediate Sanitarian, State Division of Health

Dick P. Hardison, P. O. Box 491, Gainesville, Fla., Food Sanitarian, Alachua County Health Dept.

Robert H. Harmeson, 656 Whitley Ave., Joliet, Ill., Sanitary Engineer, Will County Health Dept.

Ralph S. Howard, Jr., M.S., P. O. Box 38, Albany, Ga., Sanitary Engineer, Dougherty County

Samuel P. Ingram, 1206 West Ave., Austin, Tex., Food Sanitarian, Austin-Travis County Health Unit

George J. Kupchik, M.S., 1350 E. 3rd St., Brooklyn 30, N. Y., Health Inspector, N. Y. City Health Dept.

Earl H. Martin, 3906 N. Jefferson, Midland, Mich., Sanitarian, Midland County Health Dept.

Cyril P. Maughan, 240 S. 2nd E., Preston, Ida., Sanitarian, State Health Dept.

- Edwin B. McCary, 614 Chartres St., New Orleans 16, La., Director, Typhus Control Program, New Orleans Health Dept.
- Harold W. Merryman, 829 S. 11th St., Corvallis, Ore., Dist. Sanitary Engineer, State Board of Health
- John B. Patterson, 801 W. 44th, Vancouver, Wash., Chief Sanitarian, Clark County District Health Dept.
- Edward J. Puscas, R.F.D. 1, Collins, Ohio, Sanitarian, Lorain County Board of Health
- Andrew R. Secor, River Rd., Scarborough, N. Y., Sanitary Engineer, Westchester County Health Dept.
- Leslie K. Sherman, M.S., 747 Mountain Rd., West Hartford, Conn., Senior Sanitary Engineer, State Dept. of Health
- A. Ray Small, Health Dept., Lincolnton, N. C., Sanitarian, Catawaba-Lincoln District Health Dept.
- Franklin D. Stewart, C.E., State Dept. of Health, Columbus, Ohio, Asst. Chief Engineer
- Harold W. Streeter, Old Indian Hill Rd., R.R. 1, Box 192, Cincinnati 27, Ohio, Sanitary Engineer and Director, Water and Sanitation Investigations, USPHS
- George E. Symons, Ph.D., 155 E. 44th St., New York 17, N. Y., Assoc. Editor, Water and Sewage Works
- John W. Wakefield, 99 Ave. C., Apalachicola, Fla., Assoc. Sanitary Engineer, State Board of Health
- Lyle E. Wells, 435 Henrietta Rd., Rochester, N. Y., Director, Monroe County Dept. of Sanitation
- Ancel Keys, Ph.D., Univ. of Minn., Lab. of Physiol. Hygiene, Minneapolis, Minn., Director of Laboratory
- Herbert Pollack, M.D., 45 E. 66th St., New York, N. Y., Metabolic Clinic, Mt. Sinai Hospital
- John J. Powers, Ph.D., Ohio Agric. Exp. Station, Wooster, Ohio, Asst. Food Technologist
- Julia A. Taylor, M.S., 2238 5th Ave., New York 35, N. Y., Nutrition Consultant, New York Tuberculosis and Health Assn.
- Virginia B. White, Ph.D., Purdue Univ., School of Home Economics, Lafayette, Ind., Teacher

#### *Maternal and Child Health Section*

- Beulah Baird, 631 J St., Sacramento, Calif., Public Health Nursing Consultant, State Dept. of Public Health
- Dale E. Beverly, 4306 S. Parkway, Chicago, Ill., Attending Physician, Infant Welfare, Chicago Health Dept.
- Edwin F. Gouldman, M.D., 38 W. Virginia Ave., Richmond, Calif., Student, University of California School of Public Health
- Carlos A. Urueta, M.D., 1488 Chapel St., New Haven, Conn., Student, School of Public Health, Yale Univ.

#### *Public Health Education Section*

- Alberta Altman, 502 Sixth St., S.W., Washington, D. C., Asst. Chief, Office of Health Information, USPHS
- Adelaide P. Brady, M.Ed., Tiburon, Calif., Instructor, Physical Education, Stanford Univ.
- James T. Edington, 205 Lincoln St., Sterling, Colo., Field Representative, National Foundation for Infantile Paralysis, Inc.
- Jeanette Evans, M.A., 87 Washington Ave., Bridgeport 4, Conn., Public Health Educator, Visiting Nurse Assn.
- C. W. Gilchrist, O.B.E., Ed., 228 Sherwood Drive, Ottawa, Canada, Director, Information Services Division, Dept. of National Health and Welfare
- Barbra A. Holland, 7383 Lahser Rd., Birmingham, Mich., Physical Education Instructor
- William G. Hollister, M.D., 615 N. Wolfe St., Baltimore 5, Md., Student, Mental Hygiene Division, USPHS
- G. Eugene Honeycutt, 1309 State St., Emporia, Kans., Field Representative, National Foundation for Infantile Paralysis, Inc.
- George A. Kenny, M.S., 347 Tiffany Ave., Warwick Neck, R. I., Student, Harvard School of Public Health
- Rosa B. Lewis, M.A., Powhatan, Va., Supervisor of Schools, Powhatan School Board

#### *Industrial Hygiene Section*

- Pat Eidschun, B.S., 1523 South Peoria, Tulsa 5, Okla., Counselor of Vocational Rehabilitation, State Dept. of Education
- Dorothy Geishecker, 2537 West Argyle St., Chicago 25, Ill., Chemist, Division of Industrial Hygiene

#### *Food and Nutrition Section*

- Mary J. Angus, M.Sc., 2650 Bowker Ave., Victoria, B. C., Canada, Nutritionist, Provincial Health Dept.
- Ercel S. Eppright, Ph.D., 211 Beech, Ames, Iowa, Head, Dept. of Foods and Nutrition, Iowa State College
- Angela M. Filios, M.S., Merck & Co., General Sales Dept., Rahway, N. J.
- Florence B. Gravelle, 1055 Beacon St., Brookline 46, Mass., Nutritionist, Los Angeles City Health Dept.
- Barbara L. Hutchings, 125 E. Baltimore Ave., Clifton Heights, Pa., Industrial Sanitation in Frozen Food Industry



Effie Maiden, 615 E. 4th St., Charlotte, N. C., Health Educator, City Health Dept.  
 Joseph F. Nee, Minot Post Office, Scituate, Mass., State Representative, National Foundation for Infantile Paralysis, Inc.  
 Roy E. Patton, M.A., Box 1135, Enid, Okla., Counselor, Vocational Rehabilitation Division, State Board of Education  
 Harriet Peat, M.S., 819 N. Calhoun St., Baltimore 17, Md., Asst. Health Educator, Maryland Tuberculosis Assn.  
 J. T. Reed, Box 68, Durant, Okla., Counselor, Vocational Rehabilitation Division, State Board of Education  
 Norman D. Render, M.D., State Hospital, Clarinda, Iowa, Superintendent  
 R. Winfield Smith, M.A., 4611 State Rd., Draxel Hill, Pa., Field Secy., Pennsylvania Tuberculosis Society  
 Joe Story, M.S., Box 636, Lawton, Okla., Dist. Counselor, Vocational Rehabilitation Division, State Board of Education  
 Odessa W. Wilson, P. O. Box 536, Farmer-ville, La., Supervisor of Elementary Classroom Teaching

#### *Public Health Nursing Section*

Katharine G. Amberson, M.A., 1790 Broadway, Room 412, NOPHN, New York, N. Y., Nurse Consultant, Joint Public Advisory Service, National League of Nursing Education  
 Eva M. Bourne, 900 Ohio St., Lawrence, Kans., County Nurse, Lawrence-Douglas County Unit  
 Bonnie Clarkc, R.N., 219 S. Second St., Elkhart, Ind., Supervisor of Public Health Nurses, Elkhart Chapter, American Red Cross  
 Rose V. Fortuna, R.N., 116 Quincy, Hancock, Mich., Public Health Nurse, USPHS  
 Iva E. Hensel, 117 S. First St., Princeton, Ill., Orthopedic Nursing Consultant, Division of Services for Crippled Children  
 Edith M. Herlihy, 22 Gage St., Fitchburg, Mass., Supervising Nurse, State Dept. of Public Health  
 Gertrude Hess, M.P.H., R.N., 2904 Mildred, Chicago 14, Ill., Student, University of Michigan School of Public Health  
 Grace Hull, 428 West Ash, Mason, Mich., Hospital Nursing Consultant, State Dept. of Health  
 Anna J. Kalmanowitz, R.N., 120 E. 39th St., Brooklyn 3, N. Y., Field Public Health Nurse, Joint District Committee  
 Ruby M. Lee, R.N., M.A., State Board of Health, Little Rock, Ark., Public Health Nursing Consultant, USPHS

Emma Marenchin, R.N., 3128 West 86th St., Cleveland 2, Ohio, Instructor of Public Health, Dept. of Public Health and Welfare  
 Evelyn W. Martin, R.N., Box 1961, Greenville, S. C., Asst. District Supervising Nurse, State Board of Health  
 Mildred L. Mouw, Health Dept., Rochester, Minn., Supervising Nurse, Rochester-Olmsted County Health Unit  
 Hazel U. Murray, R.N., Christian Ave., Stony Brook, N. Y., Staff Nurse and County Public Health Nurse, Suffolk County Dept. of Health  
 Wilma H. Pestal, 6050 Hillman Ave., Cleveland, Ohio, Student, Frances Payne Bolton School of Nursing  
 Doris E. Roberts, 201 Allegheny Ave., Towson, Md., Senior Asst. Nurse Officer (R), USPHS, Tuberculosis Control Division  
 Ruby B. Wyatt, R.N., 308 North Stiles, Houston 11, Tex., Field Nurse, City Public Health Nursing Division  
 Leota P. Young, R.N., 31-12 106th St., Corona, N. Y., Administrative Supervisor, New York City Dept. of Health

#### *Epidemiology Section*

John B. Bolin, 77 Fairway Blvd., Columbus 9, Ohio, Head, Venereal Disease Investigations, State Dept. of Health  
 Theodore G. Duncan, M.D., City Hall, Division of Health, Cleveland, Ohio, Chief, Sub-division of Communicable Diseases  
 Nicholas J. Fiumara, M.D., 48 Arborough Rd., Roslindale, Mass., Dist. Health Officer, State Dept. of Public Health  
 Joseph H. Gerber, M.D., Woodmont, Conn., Student, Dept. of Public Health, Yale Univ.

#### *School Health Section*

John L. Bracken, A.M., 7500 Maryland Ave., Clayton 5, Mo., Superintendent, Clayton Public Schools  
 Fred V. Hein, M.S., 535 N. Dearborn, Chicago 10, Ill., Consultant in Health and Physical Fitness, Health Education Bureau, American Medical Assn.  
 Eloice Kilgore, M.Ed., 706 N.W. 29th St., Oklahoma City, Okla., Counselor, Vocational Rehabilitation Division, State Board of Education  
 Elizabeth A. Lockwood, M.P.H., 695 Huntington Ave., Boston 15, Mass., Research Fellow in Nutrition, Harvard School of Public Health  
 Emily A. Pratt, M.D., 1226 Smith Tower, Seattle 4, Wash., Head, Conservation of Hearing Section, State Dept. of Health

Margaret L. Rickert, R.N., 33 Yale Terrace, Linden, N. J., Head Nurse, Board of Education

Edward L. Tarpley, M.D., 700 Broad St., Nashville, Tenn., Director, School Health Service, City Public Schools

Bernadine Zimmerman, R.N., 400 Dubose Ave., San Francisco, Calif., School Nurse, Jefferson School District

#### *Dental Health Section*

Harold Berk, D.D.S., 471 Commonwealth Ave., Boston 15, Mass., Asst. Chief, Dental Dept., Forsyth Dental Infirmary for Children

Matthew Bcsdine, D.D.S., 1182 Dean St., Brooklyn, N. Y., Dentist

B. Holly Broadbent, D.D.S., Western Reserve University, School of Medicine, Cleveland, Ohio, Chairman, The Bolton Fund

Edward H. Bruening, D.D.S., 4402 N. Camino Real, Tucson, Ariz., Head, Dental Dept., Tucson Public Schools

Raeburn R. Davenport, D.M.D., 164 Newbury St., Boston 16, Mass., Advisor, Walpole Massachusetts School Dental Clinic

James B. Davidson, D.D.S., 1325 Foulkrod St., Philadelphia 24, Pa., Oral Surgeon, Frankford Hospital

Carl Friedman, D.D.S., 507 Fulton Ave., Hempstead, N. Y., Dentist

Samuel S. Herman, D.D.S., 18 Walden St., Revere, Mass., Dental Examining Officer, Personnel Centre, Camp Beale

Donald H. Miller, D.D.S., 109 Walnut, Elmira, N. Y., Chairman, Council on Dental Health, New York State Dental Society

Edmond F. de Monseigne, D.D.S., 711 Grand Ave., Asbury Park, N. J., Dental Inspector, N. J. Board of Health

George R. Moore, D.D.S., School of Dentistry, Univ. of Michigan, Ann Arbor, Mich., Consultant in Orthodontics, State Health Dept.

Fred A. Richmond, D.D.S., 1008 Huron Bldg., Kansas City 10, Kans., Dentist

Chester J. Schultz, D.D.S., 10465 Carnegie Ave., Cleveland 6, Ohio, Supervisor of Filling Clinics, Division of Health, City of Cleveland

Joseph A. Silvia, D.M.D., 7 Inman Square, Cambridge, Mass., Dentist in charge, Maverick Dispensary

Maurice Sitomer, D.D.S., 4 Raymond Ave., Poughkeepsie, N. Y., Dentist

W. James Taub, D.D.S., 609 Western Ave., Albany 3, N. Y., Dentist, New York State Vocational Institution

John A. Turner, D.D.S., 1218 Girard St., N.W., Washington, D. C., Faculty, College of Dentistry, Howard University

#### *Unaffiliated*

Cozette Hapney, 2306-41st St., N.W., Apt. 102, Washington 7, D. C., Research Assoc., Subcommittee on Medical Care, American Public Health Assn.

Rutledge W. Howard, M.D., Lederle Laboratories, 30 Rockefeller Plaza, New York 20, N. Y., Director of Professional Service

Martin Litwack, D.V.M., 1014 Canterbury Rd., Raleigh, N. C., Veterinarian, Wake County Health Dept.

Helen R. MacGregor, J.D., Governor's Office, Sacramento, Calif., Private Secretary to the Governor

Orville E. May, Ph.D., 310 North Ave., Atlanta, Ga., Chemist, The Coca-Cola Company

R. W. McComas, M.D., General Delivery, Brighton, Mich., Surgeon, USPHS

Donald F. Simpson, M.A., USPHS, Washington 14, D. C., Personnel Methods Analyst, State Personnel Administration Unit

#### *DECEASED MEMBERS*

Louis J. Frank, Woodmere, N. Y., Elected Member 1924, Unaffiliated

Leroy U. Gardner, M.D., Saranac Lake, N. Y., Elected Member 1931, Elected Fellow 1940, Industrial Hygiene Section

J. Earle Parker, Waban, Mass., Elected Member 1944, Unaffiliated

Eugene C. Peck, M.D., M.P.H., Leonardtown, Md., Elected Member 1932, Maternal and Child Health Section

Mrs. Ruby S. Sandall, Tremonton, Utah, Elected Member 1945, Public Health Nursing Section

## EMPLOYMENT SERVICE

The following pages present information for those seeking qualified public health personnel and for those seeking positions in public health.

This is a service of the Association conducted without expense to the employer or employee.

Address all correspondence to the Employment Service, A.P.H.A., 1790 Broadway, New York 19, N. Y., unless otherwise specified.

### POSITIONS AVAILABLE

(Supplemental to list in November Journal)

**Wanted: Industrial Hygienists.** Positions open for personnel with either engineering, chemical, or related scientific training, in state industrial hygiene division. All positions covered by state merit system. Monthly salaries \$280-\$400 depending on qualifications. Write Division of Industrial Hygiene, Georgia State Health Dept., Atlanta 3, Ga.

**Wanted: Two public health staff nurses** for full-time health unit, generalized program. Beginning salary \$220. Experience required. Also, one public health nurse supervisor. Beginning salary \$250. Degree desirable. Write Director J. T. Duncan, M.D., Box 110, Visalia, Calif.

**Wanted: Virologist,** for full-time research. Must have thorough experience in laboratory techniques of virus disease research. Salary \$3,500-\$6,000, depending on training and experience. Write Box G, Employment Service, A.P.H.A.

**Wanted: Health officer or pediatrician** with administrative and public health experience, to serve as assistant health officer in charge of Maternal and Child Health of King County, Washington. Salary \$6,000 plus travel. Write Dr. J. D. Fouts, Health Officer, King County Dept. of Public Health, Seattle 4, Wash.

**Wanted: Physician for Director of Division of Venereal Disease Control** in large county health department. Several large clinics in operation. Must be able to direct and supervise a complete V.D. Control Program. Specialized training and experience in this work required. One with public health training and experience preferred. Position under Civil Service. Starting salary \$6,900 plus travel allowance. Maximum salary \$7,800. Write, giving full particulars and earliest date available, Director, Wayne County Health Dept., Henry Ruff Road, Eloise, Mich.

**Wanted: Associate Secretary for Health Division, Council of Social Agencies of midwestern city;** duties are those involved in a community program of coordination and planning, with par-

ticular reference to the public health field. Graduation from an accredited college or university and experience, including some executive experience in the health field essential. Salary \$3,400-\$5,400. Write Box E, Employment Service, A.P.H.A.

**Wanted: Industrial Hygiene Chemist Class III.** Salary \$260-\$310 per mo. Must be a graduate of an accredited college with a major in chemistry. Three years' experience in professional analytical chemistry and research required. Write Industrial Hygiene Unit, Wisconsin State Board of Health, State Office Bldg., Madison 2, Wisc.

**Wanted: Sanitarian and dairy inspector.** Must be trained and experienced in all phases of inspection work. Department furnishes Pickup and pays all expenses of operation and repair. Write State Dept. of Agriculture, Room 310, Capitol Bldg., Cheyenne, Wyo.

**Wanted: Bacteriologist** with equivalent rating of junior grade, A.B. or B.S. degree, and at least one year experience in a public health laboratory, to work in County Laboratory, acting in capacity of a State Branch Laboratory. Permanent position, salary \$2,180 per annum. Write Arlington County Health Department, P. O. Box 151, Arlington, Va.

**Wanted: Assistant Bacteriologist-Serologist** for health department laboratory. College degree. Salary \$2,600. Write Charles A. Neafie, M.D., Director of Public Health, Pontiac 15, Mich.

**Wanted: Supervisor for Public Health Nurses.** Minimum requirement, certificate in public health nursing. Salary \$3,200. Transportation provided. Write Charles A. Neafie, M.D., Director of Public Health, Pontiac 15, Mich.

**Wanted: Director of city health department** in large western city, state capital. Position under Merit System. One year graduate study in public health required. Salary \$6,000-\$7,200. Write Box A, Employment Service, A.P.H.A.

**Wanted:** Three public health nurses for staff positions in City Bureau of Health, serving population of 45,000: (1) One white nurse with course in public health and experience, \$190 per month. (2) One white nurse with course and no experience, \$156.90 per month, or without course or experience \$143.75. (3) One Negro nurse without course or experience, \$143.75. Write S. D. Sturkie, M.D., Director of Public Welfare, City Hall Annex, Lynchburg, Va.

**Wanted:** Public Health Nurse with degree and public health experience for administrative position in newly organized cancer program. Salary \$3,100. Furnish own car, gas and oil furnished. Also public health nurse with degree and public health experience for educational program. Must own car. Salary \$3,100. Write Box B, Employment Service, A.P.H.A.

**Wanted:** Supervisor for Visiting Nurses' Assn. in California, 20 minutes from San Francisco. Chest Agency in Medical Welfare & Retirement fund. Salary \$3,000. Must have had adequate experience in field work, supervision and a degree in Public Health Nursing. Also, public health nurses for staff positions in generalized public health nursing program are wanted in Oakland, Calif. Salary \$200-\$215 per month. Must have California R.N. and theory in Public Health Nursing. Write Director, Oakland Visiting Nurse Association, 121 East 11th Street, Oakland 6, Calif.

**Wanted:** Well-qualified public health nurse with experience, in a joint three-county service in Oregon. Salary \$240 per month. Liberal car allowance. Write Division of Public Health Nursing, Oregon State Board of Health, 1022 S.W. 11th Avenue, Portland 5, Ore.

**Wanted:** Tuberculosis Clinician. Duties include organizing and supervising tuberculosis diagnostic and pneumothorax clinics throughout the state, organizing community and industrial x-ray surveys, interpreting x-ray films, and assisting with other related tuberculosis control activities. Must be eligible for West Virginia license. Salary \$420-\$500 per month, plus travel. Write West Virginia State Dept. of Health, Charleston 5, W. Va.

**Wanted:** Sanitary Engineer or Sanitarian for newly established Health Department in resort area of Southeastern Michigan. Salary \$3,300 plus mileage. Write H. C. Huntley, M.D., Director, Lenawee County Health Dept., Adrian, Mich.

**Wanted:** Two public health nurses in the Stanislaus County Health Dept., California. Salaries start at \$220 per month; cars furnished. Write George F. O'Brien, M.D., M.S.P.H., Health Officer, 2410 H Street, P. O. Box 1412, Modesto, Calif.

**Wanted:** Dental Hygienists for Child Dental Health Program. Salary \$2,168.28; Write U.S.P.H.S., Dental Section, Washington 11, D. C.

**Wanted:** City Health Officer in the State of North Carolina. Qualified candidates should contact Box A-1, Employment Service, A.P.H.A.

**Wanted:** Bacteriologist, New England public health laboratory. College degree plus 2 years' working experience (1 year in public health laboratory), or 2 years' college training plus 4 years' experience required. Starting salary \$2,580, maximum \$3,120. Write Box B-1, Employment Service, A.P.H.A.

**Wanted:** Epidemiologist who will also serve as Director of Division of Acute Communicable Diseases Control of Department of Public Health, Seattle, Wash. Beginning salary \$6,000 plus reimbursement for necessary travel. Write Emil E. Palmquist, M.D., Director of Public Health, 300 Public Safety Bldg., Seattle 4, Wash.

**Wanted:** Public health nurses for generalized nursing program. Salary range \$210-\$240 per month. Under civil service 40 hour week, vacation and sick leave privileges. Write Director of Public Health Nursing, City of Seattle, 504 County-City Bldg., Seattle 4, Wash.

**Wanted:** Public Health Engineer to serve as Director of the Division of Sanitation of the Seattle Department of Public Health. This is a newly created position to unify the sanitation program under one person's leadership, and which in the past has been divided into four divisions, i.e., meat, milk, plumbing inspection, and general sanitation. Beginning salary \$440 per month. Civil service position with vacation, sick leave and retirement privileges. An automobile for travel will be furnished. Write Emil E. Palmquist, M.D., Director of Public Health, 300 Public Safety Bldg., Seattle 4, Wash.

**Wanted:** Laboratory Technician in health department laboratory to make routine bacteriological water analyses and bacteriological and chemical analyses of dairy products. College degree, with at least one year of bacteriology and a year of organic and inorganic chemistry required. No experience necessary. Age limit, 30 years. Women only. Salary \$150 monthly or more, depending on quali-

fications. Opportunity for advancement. Write W. Howard Brown, Director, Food and Laboratory Division, Jacksonville Health Department, 940 Main St., Jacksonville 2, Fla.

**Wanted: Junior Bacteriologist-Serologist.** College degree with major in a science and some practical laboratory experience necessary. Starting salary \$185 per month. Write E. V. Thiehoff, M.D., Peoria Dept. of Health, City Hall, Peoria, Ill.

#### Hawaii Board of Health Wants:

One Psychiatrist to direct the bureau of mental hygiene. (Salary: \$645.00-\$728.33, plus \$45 monthly bonus.) Certification or eligible for certification by the American Board of Psychiatry and Neurology as a psychiatrist is required.

One Child Psychiatrist to assist in the direction of the bureau of mental hygiene and to head the child psychiatry program. (Salary: \$645.00-\$728.33, plus \$45 monthly bonus.) Graduation from a medical school of recognized standing and supplemented by two years of specialized training in child psychiatry; four years' experience in psychiatry of which two years shall be in child psychiatry.

One Public Health Veterinarian to plan and supervise a program of food inspection and control in the division of pure food and drugs. (Salary: \$362.08-\$436.67, plus \$45 monthly bonus.) Graduation from a recognized school of veterinary medicine with training in food inspection and control; two years' experience in veterinary medicine of which one year shall be in food inspection and control.

One Public Health Statistician to assist in the direction of the bureau of vital statistics and to head the section of public health statistics. (Salary: \$295.42-\$368.02, plus \$45 monthly bonus.) Three years of responsible statistical experience, of which one year shall be in public health statistics, and graduation from a univer-

sity of recognized standing with specialization in statistics, supplemented by graduate work in public health statistics. Write Civil Service Commission, Territory of Hawaii, 206 Hale Auhau, Honolulu 2, Hawaii. (Use air mail, 5 cents.)

**Wanted: Health Officer for Saint Joseph, Mo.** Graduation in medicine from a Grade A medical school and not less than two years of full-time experience in public health work, or, one year of such full-time experience and the completion of a course in public health of not less than one year in residence at a recognized institution of learning required. Write R. S. Minton, M.D., President of the Common Council, Saint Joseph, Mo.

**Wanted: Two Public Health Nurses** for county health department in rural California coastal county midway between San Francisco and Los Angeles. Population 45,000; largest urban population 10,000. Excellent generalized nursing service. Starting salary \$215 monthly. Car furnished or 6¢ per mile. Write County Health Dept., San Luis Obispo, Calif.

**Wanted: Several county health officers.** Salary \$6,000-\$7,200. M.P.H. in addition to M.D. desirable to begin; under Merit System; permanent. Write Mr. A. T. Johnson, Personnel Officer, Oregon State Board of Health, 1022 S.W. 11th Avenue, Portland 5, Ore.

**Wanted: Director of public health dentistry.** Salary \$4,750 beginning. Liberal travel and expense allowance. D.D.S. and M.P.H. necessary. Write Mr. A. T. Johnson, Personnel Officer, Oregon State Board of Health, 1022 S.W. 11th Avenue, Portland 5, Ore.

**Wanted: Epidemiologist** with responsibility for supervising Department of Vital Statistics. Salary \$4,878. Write Cincinnati Health Department, City Hall, Cincinnati 2, Ohio.

#### POSITIONS WANTED

Executive with long service in public health education and public relations in a large state health department available after January 1. Experienced in editorial work and in planning and executing special programs such as accident prevention, diphtheria immunization, convention planning. Part- or full-time. Write Box A-525, Employment Service, A.P.H.A.

Bacteriologist - Immunologist desires permanent position in medical or public

health bacteriology and immunology. Doctorate from Eastern university. Several years' research and teaching experience. Veteran. Write Box L-495, Employment Service, A.P.H.A.

Bacteriologist and Parasitologist with 4 years' experience as sanitarian and over 3 years' experience in Army medical and sanitary bacteriology, recently 1st Lt., Sanitary Corps, AUS, seeks position in public health laboratory or research in

industrial bacteriology. Write E-490, Employment Service, A.P.H.A.

Parasitologist, M.S., female, five years' experience in research and routine laboratory work also in allied biological fields. Write L-500, Employment Service, A.P.H.A.

Health Educator experienced in community organization work plus university teaching and adult education. Wishes position in community organization work or with special community project in health education. Write Box H-520, Employment Service, A.P.H.A.

Health Educator, female, age 37, Negro, with three years' experience in Health Education, twelve years' experience in social work and community organization; capable of working with entire community; considerable experience working with racial and religious minorities.

Write Box H-522, Employment Service, A.P.H.A.

Writer, experienced, college graduate, woman, general medical background, several scientific translations from German. Four years' research for official agency on history of state hospitals. Also experienced in organizing social service for physically handicapped. Desires position in editorial work, library research, translation, and administrative personnel work. Write Box H-526, Employment Service, A.P.H.A.

Public Health Editor, experienced in preparing health pamphlets, movie and slide films, articles and speeches. Seven years' experience in curriculum building and teacher training in adult education and 10 years' experience in teaching English. Write Box H-524, Employment Service, A.P.H.A.

## Fellowships in Medical Research

Dr. Thomas Parran, Surgeon General of the U. S. Public Health Service, announces approximately 120 one year fellowships in medical research open to men and women who are graduate science students.

The National Cancer Institute, a division of the National Institute of Health, has funds to train approximately 30 physicians in the diagnosis and treatment of cancer. Doctors wishing to specialize in this field may be appointed as trainees and be assigned to authorized institutions.

The National Institute of Health offers research fellowships to graduates of accredited colleges who have majored in biology, chemistry, dentistry, entomology, medicine, physics, and other scientific fields. Senior research fellowships are awarded at a yearly stipend of \$3,000 to those who hold a Ph.D. degree in one of the specified scientific subjects. Junior fellows receive \$2,400 annually and must hold an M.S. degree or have completed the equivalent of such a degree in post-graduate study. Fellowships may be renewed for a second year. Applications for fellowships and traineeships should be sent to the Director, National Institute of Health, Bethesda, Md.

The U. S. Public Health Service also administers fellowships for health personnel from other American republics and the Philippine Islands. Applications for these fellowships should be sent to The Surgeon General, U. S. Public Health Service, Washington 25, D. C.

## Fellowships for the Training of Health Educators

The U. S. Public Health Service announces that fellowships leading to a Master's degree in Public Health in the field of health education are again being offered. Candidates must be U. S. citizens between 22 and 40 years of age, must hold a bachelor's degree from a recognized college or university, and must be able to meet the entrance requirements of the accredited school of public health of their choice.

In addition to the degree, courses in the biological sciences, sociology and education may be required. Training in public speaking, journalism, psychology, and work in public health or a related field are considered desirable qualifications.

Tuition, travel expenses for field training and a monthly stipend of \$100 will be provided out of funds furnished by the National Foundation for Infantile Paralysis. The year's training which begins with the 1947 fall term, consists of 8 or 9 months of academic work and 3 months of supervised field experience.

Veterans are encouraged to apply and will be paid the difference between the allowance under the G.I. Bill of Rights and the monthly stipend of \$100. Employees of local and state health departments are not eligible since Federal grants-in-aid are already available for such training purposes.

Application blanks may be obtained by writing the Surgeon General, United States Public Health Service, Washington 25, D. C., and must be filed prior to March 15, 1947.

## NEWS FROM THE FIELD

### FIRST UNRRA TRANSFER TO WORLD HEALTH ORGANIZATION

On October 22, the United Nations World Health Organization took over from UNRRA the latter's epidemiological functions. This is the first of UNRRA's activities to be transferred to the new organization. By an agreement signed between Director General LaGuardia and Dr. G. B. Chisholm, Executive Secretary of the Interim Health Commission, the latter organization will now be responsible for the collection and dissemination of information to all nations on outbreaks of epidemic diseases to guide them in enforcing international quarantines. Progress has also been made in arranging for the transfers of other UNRRA health activities.

### TENNESSEE PUBLIC HEALTH ASSOCIATION ORGANIZES STATISTICAL DIVISION

At a recent meeting of the Tennessee Public Health Association, in response to a petition of members, a Statistical Section was organized. The first meeting of the Section was planned by Dr. Ruth Rice Puffer, Director of the Statistical Service of the Tennessee Department of Public Health, Nashville. Papers on the statistical program at the Vanderbilt University School of Medicine, of the Tennessee State Department of Health, and of other state health departments were given respectively by Dr. Paul Densen, Assistant Professor of Preventive Medicine and Public Health; Ann Dillon, Statistician of the Tennessee Department of Health, and Ellen B. Whiteman, Statistician of the Commonwealth Fund. William F. Elkin, Statistician of the Oak Ridge Department of Health, discussed public health statistics in Oak Ridge.

The following officers of the Section were elected:

*Chairman*—Dr. Paul M. Densen, Vanderbilt University School of Medicine

*Vice-Chairman*—Margaret Rice, Tennessee Valley Authority

*Secretary*—Ann Dillon, Tennessee Department of Public Health

### COMPULSORY PASTEURIZATION OF MILK

A news release for October, 1946, of the U. S. Public Health Service, Milk and Food Section of the Sanitary Engineering Division, lists those municipalities with compulsory pasteurization of milk. This "List of American Municipalities With Compulsory Pasteurization" cites 192 municipalities that require pasteurization of all marketed milk. Only certified raw milk is allowed in 277 communities with three others allowing certified raw milk only on a physician's prescription. It is to be noted that of the 472 listings, 241 of them are in Massachusetts or New York State. Fifteen states are not represented at all.

### GRANTS FOR ENVIRONMENTAL SANITATION RESEARCH

According to a recent news release from the U. S. Public Health Service, grants for research work in environmental sanitation are available. These are made possible through the grant-in-aid program for research in medical and allied fields administered by the Research Grants Division, National Institute of Health, U. S. Public Health Service. Grants can be made to universities, hospitals, laboratories, and other public or private institutions and to individuals. Applications are referred to a study section composed of experts in the field covered by the pro-

posed work. The news release referred to above states:

The Study Section (Sanitation) defines environmental sanitation broadly as including not only the older phases of activity, such as water, waste, and milk and food sanitation, but also the so-called "newer phases" of sanitation, such as atmospheric pollution, housing, air disinfection, and home accidents.

Further details and application forms can be obtained from John Andrews, Sanitary Engineer (R), U. S. Public Health Service, 19th and Constitution Avenue, N.W., Washington 25, D. C. Mr. Andrews is executive secretary of the Sanitation Study Section.

#### YALE PLANS TO TEACH INDUSTRIAL MEDICINE

Dr. Francis G. Blake, Dean of the Yale University School of Medicine, has announced the establishment, at Yale, of an Institute of Occupational Medicine and Hygiene for work in the field of Industrial Medicine. The Institute will be headed by Dr. Ronald F. Buchan, newly appointed Assistant Professor of Industrial Medicine, who will serve as clinical director of the Institute.

Primary aims of the Institute,

1. Training of medical students and industrial physicians, on the ground that occupational medicine is a specialty.

2. Special graduate instruction available to graduate students in medicine, nursing, public health, and engineering.

3. Research in occupational medicine and hygiene.

4. Consultation. The Institute will be designed to assist industrial concerns on certain practical questions in the same fashion as the clinicians in the School of Medicine assist their colleagues in the practice of medicine.

#### UNION HEALTH CENTER IN CHINA

The Willis F. Pierce Memorial Hospital in Foochow, China, capital of Fukien province, has established a department of public health to be known as the Christian Union Health Center. The health center will engage particularly in the fields of maternal and child

health and of school health and in training Chinese health workers in these fields. This will be done in coöperation with the Chinese government's own health program and in areas which the government, by reason of shortage of personnel and funds, has not yet reached. It will operate from a health center but will emphasize the long neglected field of rural health. This will be done by means of a mobile unit equipped with car and trailer. The unit will act as an experimental and demonstration team with emphasis on quality rather than quantity of work.

#### RESEARCH ON HYPERTENSION

The U. S. Public Health Service has awarded the Washington University School of Medicine, St. Louis, a grant of \$270,000 for support of research on hypertension. The grant will cover five years, \$70,000 to be spent the first year and \$50,000 each year thereafter. The work will be under the direction of Dr. Henry A. Schroeder, who comes from the Hospital of the Rockefeller Institute for Medical Research, where he worked with Dr. Donald D. Van Slyke. Dr. Schroeder has been active in the study of hypertension in the past, having described an enzyme in the kidney which affects blood pressure.

#### HEALTH, LABOR AND INDUSTRIES PROGRAM

A new coöperative program between the Washington State Department of Health and the State Department of Labor and Industries to better health and safety conditions for industrial workers has been functioning satisfactorily, according to Dr. Arthur L. Ringle, State Director of Health. Dr. Lloyd M. Farner, head of the Industrial and Adult Hygiene Section of the Department of Health, explained that the agreement was entered into because of overlapping responsibilities of the two departments, particularly in the



field of occupational disease control. Under provisions of the coöperative program the Department of Health is responsible for study and evaluation of industrial hygiene hazards, while the enforcement of compliance with recommendations is the responsibility of the Department of Labor and Industries. The Department of Health is now assisting by providing professional opinion as to whether it is reasonable to suspect that individual cases may be of occupational origin, supplying occupational disease consultant services and providing factual information to panels of physicians selected to assist in judging contested cases. Dr. Ringle said that under the new program provision has been made for earlier reporting of occupational diseases, the details of the reporting system to be announced later. The coöperative program has been approved by the Washington State Medical Association as well as by representatives of industry and labor.

#### HEALTH COUNCIL FORMED IN PORTLAND, OREGON

The Multnomah County Oregon Health Council was organized July 25, when representatives of 15 participating groups elected officers and executive committee members and outlined plans for the future operation of the council. The project is under the auspices of the Multnomah County Medical Society. Dr. Blair Holcomb, Portland, was elected Chairman of the Council which will "concern itself with any or all aspects of community health, . . . including education, coördination, investigation, planning and the making of recommendations with respect to those aspects of community health with which the Council may become concerned."

#### CHAMBER OF COMMERCE OPPOSES ANTIVIVISECTION LEGISLATION

Research on animals for the development of life-saving medical knowledge

has been endorsed by the Chamber of Commerce of the United States in a statement of policy released recently by Howard Strong, secretary of the Health Advisory Council of the Chamber. Mr. Strong announced the policy as the result of a referendum vote of member organizations. The statement submitted for the vote is as follows: "In view of the great progress that has been made in preventive and curative medicine and surgery through animal research and the prospect of even greater progress in the future, the National Chamber is unalterably opposed to the prohibition of this scientific procedure. Such a prohibition would seriously hamper all medical progress." Result of the vote was 2,424 organizations in favor of the statement, 18 against. Represented in the poll were slightly over a million business men. Mr. Strong, in a letter to Dr. Anton J. Carlson, Chicago, president of the National Society for Medical Research, announced the outcome of the Chamber of Commerce referendum and said "we are therefore now in a position to present the chamber's opposition to anti-vivisection legislation wherever such legislation rears its head and, when advisable and possible, a representative of the Chamber can appear in opposition."

#### ILLINOIS TRAINING PROGRAM FOR PUBLIC HEALTH PHYSICIANS

"It is anticipated that Illinois will experience a continuous, long-term need for well trained public health physicians." With this declaration the Illinois State Health Department announces a program to provide medical public health personnel with both field and academic training.

The training will consist of an orientation period under the direct supervision of experienced public health physicians of six months' work in the various divisions of the State Health Department and in one or more of the

local county, multi-county, or city health departments. A year of post-graduate work in one of the schools accredited by the American Public Health Association for the degree of M.P.H. follows satisfactory completion of this period.

A monthly stipend, tuition, and traveling and maintenance expenses while away from headquarters will be paid during training. Graduates of an approved medical school with at least one year of rotating internship in an approved hospital, with license to practise, or eligible, in Illinois, and preferably under 35 years of age are desired. Selection is made through personal interview by a committee of the State Health Department on the basis of qualifications and in accordance with the provisions of the State Civil Service Law. Trainees must agree to remain in public health work in Illinois for at least two years.

Physicians interested in this program should apply to the Director, Illinois Department of Public Health, Springfield.

#### WEST VIRGINIA CANCER SOCIETY CHANGES NAME

The West Virginia Division of the American Cancer Society was reorganized at a meeting at Parkersburg, August 1, and the name changed to the West Virginia Cancer Society, Inc. New officers include Dr. Chauncey B. Wright, Huntington, chairman; Dr. Thomas F. E. Dess, Keyser, vice chairman; Mr. Charles Lively, Charleston, secretary, and Homer Gebhardt, Huntington, treasurer.

#### TRAINING PROGRAM OFFERED BY WISCONSIN STATE BOARD OF HEALTH

A training allowance of \$360 per month is being offered by the Wisconsin State Board of Health for post-graduate training in public health. This stipend, plus tuition and the cost of

travel, is being offered to physicians selected as District Health Officers under the civil service requirements of the state. One or two full semesters of training at a university having an accredited public health course will be offered to those who qualify for district health officer positions.

#### NATHAN GOLDBLATT MEMORIAL HOSPITAL FOR CANCER TREAT- MENT AND RESEARCH

Gift of a million dollars by the Goldblatt Brothers Foundation to establish "The Nathan Goldblatt Memorial Hospital" as the center of the University of Chicago's extensive program of cancer treatment and research was announced by Ernest C. Colwell, president of the university.

As a clinical center, the hospital will be devoted exclusively to treatment of cancer and other neoplastic diseases. The hospital will be built to connect with the surgical section of Billings Hospital of the university clinics. The Nathan Goldblatt Memorial will be the only university hospital in the country with the entire staff engaged full time in cancer treatment and research.

The hospital also will be the focus of the University of Chicago's Committee on Cancer and its associated Committee on Normal and Neoplastic Growth, which coördinate research on cancer in nine clinical and basic science departments. In addition to the present research facilities, significant additional resources will be added soon by the laboratories of the university's Institute of Radiobiology and Biophysics and its Institute of Nuclear Studies. Both institutes already have complete staffs.

#### HARVARD OFFERS NEW GRADUATE DEGREES IN HYGIENE

James Stevens Simmons, M.D., Dr.P.H., Dean of the Harvard School of Public Health, recently announced

that in addition to the degrees of M.P.H. and Dr.P.H., the Harvard School of Public Health now offers the degrees of Master of Science in Hygiene and Doctor of Science in Hygiene, open to research students.

## PERSONALS

### Central States

ARTHUR W. FRISCH, M.D., Associate Professor of Bacteriology and Clinical Pathology, Wayne University College of Medicine, Detroit, has resigned to become Associate Professor of Bacteriology at the University of Oregon School of Medicine, Portland. Dr. Frisch has been a member of the Wayne faculty since 1937, returning to the staff in February after more than 3 years' service in the U. S. Army.

### CHANGES IN HEALTH PERSONNEL IN INDIANA:

HARRY P. ROSS, M.D., Richmond, has been named Secretary of the Richmond Board of Health, succeeding the late GEORGE B. HUNT, M.D. ARTHUR J. WHALLON, M.D., Richmond, has been appointed a Member of the Board.

LUKE W. FRAME, M.D.,<sup>†</sup> Washington, has been appointed Medical Director of the branch office in Washington of the State Board of Health with jurisdiction over southwestern Indiana. This district is one of five set up under a decentralization program by the State Board of Health.

CARL C. KUEHN, M.D., Indianapolis, has been named Director of the Division of Tuberculosis Control of the Indiana State Board of Health,

succeeding HOLLAND THOMPSON, M.D.

### CHANGES IN HEALTH PERSONNEL IN KANSAS:

ALICE M. FINLEY, R.N.,<sup>†</sup> who for the last year has been associated with the Alabama State Health Department as Supervisor of Nurses in Macon County, and Acting Director of Tuskegee School of Nurse Midwifery, has returned to Kansas to serve as generalized consultant nurse for the Kansas State Board of Health. Miss Finley formerly served in this capacity before going to Alabama.

ELIZABETH SUTCLIFFE, M.P.H., a Kansas nurse who returned to the state September 1, has accepted the position of Public Health Nursing Instructor at the University of Kansas Hospitals, a newly created position. This is the first nursing school in the state to offer an integrated basic course in public health nursing.

ROELOF SANTING, M.D., Gladwin, Mich., director of the Shiawasee County Health Department, has been appointed to a similar position for the Lansing Department of Health. He succeeds FLOYD R. TOWN, M.D.,<sup>†</sup> who resigned after holding the position for 4 years.

FLOYD R. TOWN, M.D.,<sup>†</sup> formerly Director of the Department of Public Health, Lansing, Mich., has been appointed Health Officer for Bremer-ton-Kitsap County, Wash.

### Eastern States

DANIEL BERGSMAN, M.D., M.P.H.,\* has been appointed Deputy Director of Health, Department of Health, State of New Jersey, effective July 1, 1946.

R. V. BROKAW, M.D.,\* has been appointed Chief of the Division of Cancer Control of the New Jersey

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

State Department of Health, effective November 1.

JOHN H. CAULEY, M.D., M.P.H.,† has been appointed Health Commissioner of the City of Boston, Mass., succeeding FRED BAILEY, M.D. Dr. Cauley has served the department for more than 15 years, most recently as Director of the Bureau of Communicable Diseases.

WALTER CLARKE, M.D.,† of New York, N. Y., Executive Director of the American Social Hygiene Association, was recently awarded a Certificate of Appreciation from the War Department for his wartime service as Consultant to the Secretary of War on Venereal Disease Control.

ROBERT W. CULBERT, M.D.,† after 2 years in the Navy as a Lieutenant Commander, has returned to his former position as Chief of the Division of School Health Services, New York City Department of Health.

ERNEST D. EASTON,† who has served for a number of years as Executive Secretary of the New Jersey Tuberculosis League, has announced his retirement, effective January 1, 1947.

DOMINICK J. LACOVARA, M.D.,† has been appointed Resident Psychiatrist of the Matteawan State Hospital, Beacon, N. Y., as of September 1. He was recently associated with the Harlem Valley State Hospital, Wingdale, N. Y. Dr. Lacovara is also presently Consultant in Psychiatry at Craig House, Beacon, N. Y.

KENNETH S. LANDAUER, M.D.,† has been appointed Director of the Division of Medical Care of the National Foundation for Infantile Paralysis. Before this appointment, he has been the Director of the New York State Reconstruction Home at West Haverstraw, N. Y. Dr. Landauer will coordinate the organi-

zation's year-round program of Medical Care and Treatment of Infantile Paralysis victims under supervision of HART E. VAN RIPER, M.D.,† Washington, D. C., Medical Director. ESMOND R. LONG, M.D.,\* Director of the Henry Phipps Institute for Study, Treatment and Prevention of Tuberculosis, Philadelphia, Pa., has been appointed Director of Research of the National Tuberculosis Association. Dr. Long has served as Chief Consultant on Tuberculosis in the Office of the Surgeon General of the Army from July, 1942, to March, 1946, with the rank of Colonel.

ANTHONY J. MANZELLA, M.D., Buffalo, N. Y., has been appointed Deputy Commissioner of Health and full-time Director of the Division of Communicable Diseases of the Buffalo Department of Health, effective July 1.

WILLIAM J. ORCHARD,\* General Manager of Wallace and Tiernan Company, Inc., was signally honored by the Federation of Sewage Works Association during the Annual Conference held October 7-9. Mr. Orchard was the recipient of the Federation's highest honor, that of Honorary Membership. This distinction was conferred in recognition of the counsel and untiring energy he has given the affairs of the Federation since its inception.

ROBERT E. PLUNKETT, M.D.,† General Superintendent of Tuberculosis hospitals, New York State Department of Health, has been appointed a member of The National Research Council Division of Medical Sciences' Committee on Tuberculosis.

WALTER R. SCOTT,† Registrar for the New Jersey State Department of Health at Trenton, recently completed 41 years of service with the department.

JOHN CRAYTON SNYDER, M.D., has been appointed Professor of Public

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

Health Bacteriology at the Harvard School of Public Health. Dr. Snyder was graduated in medicine from Harvard in 1935 and has been connected with the field staff of the International Health Division, Rockefeller Foundation, for studies of typhus fever which he has continued in assignments to the U. S. Army.

HARRY M. WEAVER, PH.D.,<sup>†</sup> Acting Director of Research for the National Foundation for Infantile Paralysis, has been named Director of Research for the organization. Previously on the faculty of Wayne University College of Medicine, Detroit, Dr. Weaver joined the National Foundation staff last February as Assistant to the Medical Director.

ALLEN O. WHIPPLE, M.D., has been announced as Clinical Director of the Memorial Hospital, New York, for the Treatment of Cancer and Allied Diseases. Before taking up his duties at the Memorial Hospital, February 1, 1947, Dr. Whipple will go to England to study the cancer activities there and visit the American University of Beirut, Lebanon, of which he is a trustee, and act as consultant in the reorganization of the Medical Center there. Dr. Whipple retired September 30 from the Columbia University College of Physicians and Surgeons with the title of Valentine Mott Professor Emeritus of Surgery.

#### Southern States

JUSTIN M. ANDREWS, SC.D.,\* who served during the war as a Colonel in the Sanitary Corps, AUS, was recently commissioned as Senior Scientist (R) with the U. S. Public Health Service and has been assigned as Deputy Officer in charge of the Com-

municable Disease Center, Atlanta, Ga.

LUDWIG ANIGSTEIN, M.D., PH.D.,<sup>†</sup> of the University of Texas School of Medicine has completed a 4 months lecture tour in Poland as UNRRA lecturer on communicable diseases. Dr. Anigstein has returned from his leave of absence and resumed research work and duties as Professor of Preventive Medicine.

C. H. CONNELL, PH.D.,<sup>†</sup> recently a Lieutenant Colonel in the Sanitary Corp, Army of the United States, is now with the Department of Preventive Medicine and Public Health, University of Texas Medical Branch, Galveston, Tex. Prior to his military activity, Dr. Connell was connected with the Department of Municipal and Sanitary Engineering, A. & M. College of Texas, College Station, Tex., as Associate Professor.

FREDERICK H. DOWNS,<sup>†</sup> Principal Sanitarian, Alabama State Health Department, Division of Inspection, was the recipient of the King Haakon VII Freedom Medal recently, in ceremonies presided over by Governor Chauncey Sparks, in Montgomery, Ala. The citation presented to Mr. Downs read in part: "outstanding services rendered to the cause of Norway during the liberation." Mr. Downs, then Maj. Downs, Sn.C., was one of the public health officers assigned to Norway shortly after liberation of that country.

#### CHANGES IN HEALTH PERSONNEL IN FLORIDA:

FRITZ A. BRINK, M.D., long associated with public health in Florida, recently resigned as County Health Officer of Jefferson County.

BURDETTE L. ARMS, M.D.,\* formerly State Health Officer in Florida but recently employed in public health work in Maine, has been appointed County Health Officer of Jefferson

\* Fellow, A.P.H.A.

† Member, A.P.H.A.

County with headquarters at Monticello.

CHARLES J. ROEHM, M.D., recently released from the A.U.S., has accepted the position of Local Health Officer in the Unit composed of Okaloosa, Walton, and Holmes Counties. His chief headquarters will be at DeFuniak Springs.

BRUCE UNDERWOOD, M.D.,† recently Health Officer in Henderson County, Ky., has been appointed Local Health Officer in the Leon County Health Department with headquarters at Tallahassee.

JAMES B. HALL, M.D., has been appointed Health Officer in the Southeastern Florida Health District with headquarters at Vero Beach, effective October 15.

FERN A. GOULDING,\* formerly with the American National Red Cross, Washington, D. C., has been appointed Coordinator of Community Experience, at the School of Nursing, Adelphi College, Garden City, N. Y., where she will coöperate with county public health agencies and the New York City Department of Welfare.

PAUL V. JOLIET, M.D., has been appointed Director of the Division of Tuberculosis Control, Kansas State Board of Health, filling the vacancy created by the resignation of HOMER L. HIEBERT, M.D.† Dr. Joliet who has been carrying on tuberculosis work for the U. S. Public Health Service, Bethesda, Md., is on loan to Kansas by the U. S. Public Health Service.

#### CHANGES IN HEALTH PERSONNEL IN KENTUCKY:

RICHARD B. FULKS, M.D.,† Barbourville, has resigned as Health Officer for Knox, Laurel, and Whitley Counties, to become Field Director

of the Division of County Health Work of the Kentucky State Department of Health, with offices in Louisville.

WILLIAM F. LAMB, M.D., Russellville, has been appointed Deputy Director of Health of Louisville and Jefferson County, succeeding GRADIE R. ROWNTREE, M.D.,\* who is on a year's leave of absence. Dr. Lamb will carry this work in addition to his activities as Venereal Disease Control Officer in the Department.

EDWIN B. UNDERWOOD, M.D., has resigned as Health Officer of Union County, effective September 1.

JOHN R. PATE, M.D.,† who has been connected with the State Serological Laboratory and responsible for the Supervision of Private and Public Laboratories in Kentucky operating under the martial law, has been appointed Director of the State Division of Venereal Disease. He succeeds DR. WILLIAM R. LAMB of Russellville.

DUDLEY A. REEKIE, M.D., U. S. Public Health Service, has been appointed Health Officer of Lexington-Fayette County, effective August 1.

EDWARD N. MAXWELL, M.D., Assistant Surgeon, Tuberculosis Control Division, U. S. Public Health Service, who has been working at the North Carolina Sanatorium, Sanatorium, N. C., has been named Acting Director of the Division of Tuberculosis, Kentucky State Department of Health, succeeding RUSSELL E. TEAGUE, M.D., Louisville, Director of the Division who has joined the Public Health Service. Dr. Teague will be assigned to the First District Office of the Public Health Service in New York and will be in charge of Tuberculosis Control for a group of Eastern States.

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† Member, A.P.H.A.

WILBUR V. BRADSHAW, JR.,† Lawrenceburg, has resigned as Health Director of Anderson and Shelby Counties to become Assistant Director and Chief of the Division of Communicable Disease of the San Antonio (Texas) Department of Health.

EDWARD G. MCGAVRAN, M.D.,\* Health Officer of St. Louis County, Clayton, Mo., has been appointed Professor and Head of the new Department of Public Health and Preventive Medicine at the University of Kansas School of Medicine, Kansas City. He will also serve as education consultant in Public Health and Preventive Medicine for the Kansas State Board of Health.

THOMAS MCPHERSON BROWN, M.D., has been appointed Adjunct Clinical Professor of Medicine at the George Washington University School of Medicine, Washington, D. C. Formerly, he has been Assistant Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore, Md. During the war he served 42 months in the Pacific theater as a Consultant in Infectious and Tropical Diseases and later was a Special Consultant to the Surgeon General, Washington, D. C.

THOMAS T. MACKIE, M.D.,† who recently has served in the Office of the Surgeon General, U. S. Army, has been appointed Professor of Preventive Medicine and Chairman of the Department of Medicine at the Bowman Gray School of Medicine, Winston-Salem, N. C.

WALTER A. PLECKER, M.D.,\* Richmond, Va., has resigned as Director of the Virginia State Bureau of Vital Statistics to devote more of his time to the racial study of Indians and Negroes. Dr. Plecker, who is 85 years of age, joined the State Bureau in 1912.

MORRIS POLLARD, D.V.M.,† until re-

cently Chief of the Veterinary and Virus Section, Eighth Service Command Laboratory, Fort Sam Houston, Tex., has accepted a position as Assistant Professor of Preventive Medicine and Director of the Virus Laboratory, University of Texas Medical Branch. Prior to his commission with the Army, Dr. Pollard served on the staff of the Animal Disease Station, National Research Center, Beltsville, Md.

### Western States

#### CHANGES IN HEALTH PERSONNEL IN CALIFORNIA:

WILLIAM E. TURNER, M.D.,† San Jose, has been named Health Officer of Santa Clara County, succeeding CECIL M. BURCHIEL, M.D., San Jose, who will devote his entire time to private practice.

MERLE E. COSAND, M.D., formerly of Carbondale, Ill., has been named Health Officer of San Bernardino County to succeed WALTER W. FENTON, M.D., San Bernardino, who returned July 1.

JAMES E. DRAKE, M.D.,† has retired as Director of Health and Public Schools of Spokane, Wash., a position he has held for twenty-nine years with the exception of two years' army service in World War II.

EDYTHE C. HERSHEY, M.D.,\* Helena, Mont., Head of the State Maternal and Child Health Division and Crippled Children's Service for the last 8 years has resigned to become Regional Medical Consultant for the U. S. Children's Bureau with headquarters in Dallas, Tex.

RAYMOND KAISER, M.D., San Francisco, Calif., has been appointed Chief of the Bureau of Communicable Diseases, California Department of Public Health, effective August 12. Dr. Kaiser has recently

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